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5 DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) and
6 THE DOW CHEMICAL COMPANY (Dow)

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9 TRI-CITIES DIOXIN COMMUNITY MEETING

10 May 3, 2007

11 6:30 - 9:00 p.m.

12 Horizons Center, 6200 State Street

13 Saginaw, Michigan
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19 REPORTED BY: Natalie A. Gilbert, CSR-4607, RPR

Bay Area Reporting

20 P.O. Box 6069

Saginaw, MI 48608-6069

21 (989) 791-4441
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2 CHUCK NELSON: Good evening. My name is
3 Chuck Nelson. I'm the facilitator for tonight's
4 quarterly community meeting concerning the Tri-Cities
5 Dioxin contamination. I want to call your attention
6 to a couple of documents that are on the back table.
7 First is the agenda which you see on the overhead.
8 You will note that we listen diligently what folks
9 said about being sure to have enough opportunity to
10 ask questions, provide comments, so we worked to
11 provide more than an hour tonight for questions and
12 comments after the presentations.

13 I would also call your attention to the back of
14 the agenda which has the ground rules for the meeting
15 concerning being respectful, one person speaking at a
16 time after acknowledgement by the facilitator, being
17 honest, showing sensitivity. I would also note that
18 the website addresses for information from the
19 community meetings are all available to you on the
20 back of the agenda so you can look for information in
21 addition to what you hear tonight and follow up.

22 The other thing I want to call your attention to
23 is a new document tonight. This is the first time
24 we've put this document out for folks. It's
25 characterized as the overview and purpose of

1 Tri-Cities Dioxin community meetings and it is jointly
2 authored by the Department of Environmental Quality
3 and the Dow Chemical Company. It provides a very
4 brief but very succinct and useful history of these
5 meetings and the situation about which we are talking.
6 For folks who are new to this process, you will find
7 this especially useful and it will take a brief moment
8 of your time. I will not read it to you up here, but
9 suffice it to say, it talks about the history of
10 Dioxin contamination, the regulatory and legal process
11 that is ongoing, and what efforts have been taken to
12 remediate problems to date.

13 It also talks about the meetings such as the
14 meeting tonight. It encourages you to come early if
15 you believe you have questions that you would like to
16 spend considerable time with a representative of the
17 State of Michigan, the EPA, or Dow Chemical Company,
18 or to be willing to stay a little bit later so we can
19 spend considerable time. You can ask very
20 individualized detailed questions. We work very hard
21 to make sure every person here who has a statement or
22 a question to ask gets a chance to do that within the
23 hour or so we have allotted to that purpose, but all
24 the participants have been more than willing to come
25 early and stay late. So your opportunity is here and

1 we encourage you to take advantage of that.

2 I would also note that we have two more meetings
3 in the year 2007 after this meeting. They're noted on
4 your regular agenda at the bottom. They are
5 August 9th and November 28th, so, please, get those on
6 your calendar. Now can we do introductions from --
7 let's see, I think the first presenter was going to be
8 from your end, so, Jim, why don't you start with DEQ
9 introductions, and then, John, you'll introduce yours
10 and just keep going.

11 JIM SYGO: Thank you, Chuck. It's probably
12 easiest just to have DEQ staff and MDCH staff stand
13 up, and as I go through, you can sit down, okay. Up
14 front, we have George Bruchmann, who's the Division
15 Chief for Waste Management Division; Steven Buda,
16 who's the Acting Section Chief for the Hazardous Waste
17 Program; Deb MacKenzie-Taylor, the toxicologist on
18 this project; Al Taylor, geologist on the project;
19 then we have Joy Brooks, who's with our Land and Water
20 Management Division in our Bay City office, our
21 Saginaw Bay office; Joel Haas also with the Land and
22 Water Management Division; Mike Gray, who's with our
23 Water Bureau and he's out of our Lansing office; Mark
24 Reed, who's the District Supervisor for Air Quality
25 Division in our Saginaw Bay office; Cheryl Howe at the

1 back desk, who's the Project Manager for this
2 particular site; Trisha Peters assisting her at the
3 back table there; Bob McCann, who's our Communications
4 Officer; and then from MDCH we have Dr. Linda Dykema
5 with Michigan Department of Community Health,
6 Toxicology and Response; and then we also have Kory
7 Groetsch, also toxicologist with Michigan Department
8 of Community Health. Did I get everyone? I think so.

9 JOHN MUSSER: Good evening, everyone.
10 Thanks for coming. It's a tough night to come out for
11 a meeting. It's beautiful weather but maybe we can
12 enjoy this meeting and get something useful from it.
13 Would the Dow folks perhaps stand? I think that's a
14 good process that Jim started here so let's try to do
15 that and I'll go around the room here and acknowledge
16 everyone.

17 We'll start over there with Greg Cochran. Greg
18 is our Leader for the Michigan Dioxin Initiative; Jack
19 Clough, consultant to Dow; Jim Collins, Jim is our
20 Epidemiology Leader; Tom Long from the Sapphire Group, with
21 Expertise in Risk Management and Toxicology; Bob Budinsky, Bob
22 is with our Toxicology Group at Dow; Gary Dyke,
23 Project Manager for CH2M Hill, one of our contractors;
24 Peter Simon with Ann Arbor Technical Services, also
25 one of our contractors who will be speaking, both Gary

1 and Peter will be speaking this evening; Denise Kay
2 with ENTRIX working on Ecological Risk Assessment;
3 Bryce Landenburger working with Dow on the risk
4 assessment side of things; Dr. Mike Carson is our
5 Regional Medical Director; Todd Konechne is our
6 Off-Site Remediation Project Leader; Steve Lucas is
7 our On-Site Remediation Leader; Dave Gustafson,
8 Regulatory Affairs working for Michigan Operations;
9 and with us as well is Lauri Gorton. You've seen her
10 before and Lauri is with CH2M Hill working on a
11 project for us. I think that's it.

12 Our first presentation this evening is going to
13 be from CH2M Hill reviewing the results from our
14 sampling and analysis in Midland on the soils there,
15 and I'll let Gary pick it up from there. I'll set up
16 the presentation to do that.

17 GARY DYKES: Thank you very much. I'm here
18 tonight to talk to you a little bit about Midland area
19 soils sampling results, a relatively short
20 presentation. It gives a quick overview really of our
21 key findings from the work that we did last fall.
22 I'll just direct you to the MDEQ website if you want
23 to find a full and unabridged text, and all the
24 information is contained there, and just like I said,
25 this is a quick overview of those results.

1 This is a short agenda here. I just want to talk
2 real briefly and remind everyone of the study
3 objectives, go through the work completed, give you
4 some of the key findings on these three or four areas
5 on the slide here, and then talk briefly about some of
6 the next steps regarding the work in Midland.

7 The study objectives were outlined in the
8 workplan. It was approved by the State, and the
9 primary objective that I want to remind everyone was
10 that we were to go out and characterize the soil
11 properties throughout the City of Midland so that we
12 could utilize that information to better understand
13 represent conditions, various soil properties, such as
14 those that can be used in a possible bioavailability
15 test. It was important to do that specifically for
16 the City of Midland study area because the
17 bioavailability study would focus specifically on
18 characteristics in Midland.

19 At the same time, we wanted to take advantage of
20 the opportunity while we were collecting samples to
21 get some additional information for us, and one of
22 those was to learn a little bit more about the
23 distribution and the nature and extent of dioxin and
24 furans, supplement the historical and existing
25 information that was already available, and also take

1 an opportunity to collect some information about other
2 chemicals that might be present in the area and might
3 potentially be related to the Dow Chemical facility.

4 This is just a quick map of the study area. It's
5 basically a radial type design leading outward from
6 the plant itself. The key point I want to make sure
7 here is to just let you know that we had 136 total
8 sample stations. The green dots are all locations
9 where we were able to obtain permission to collect
10 samples and we only had a few red dots where we were
11 denied permission, so we had very excellent
12 participation from the City of Midland which allowed
13 us to collect a lot of samples across the study area
14 and meet our study objectives.

15 This is a summary slide of the general findings
16 for the soil parameters and these are the parameters
17 of interest to us for potential use in evaluating
18 bioavailability. Essentially, the key message that we
19 want to get across is that we found that, generally
20 speaking, we have very similar soils across the study
21 area. You can see the percentages up there, largely
22 sandy type soils, and generally had a relatively low
23 amount of variability of those parameters across the
24 City. That was also true of the other things that we
25 looked at, like total organic carbon, black carbon,

1 organic carbon. These are some of the specific
2 parameters that are of interest relative to
3 bioavailability, and like the general soil parameters,
4 they also exhibited relatively low variability in the
5 study area.

6 Finally, we took a look at some of the
7 relationships between the various parameters and did,
8 in fact, find that there was some positive correlation
9 between the type of soil and the bioavailability of
10 the parameters themselves. If you go to the report,
11 you'll find that there are numerous types of maps that
12 display the graphics to show all this information a
13 lot of different ways. I'm just going to present one
14 tonight because I think it really gives a good example
15 of the general findings that we found here.

16 This is what we call a triplot and it plots on
17 three different axes the relative percentages of the
18 different grain sizes, with sand being on the bottom,
19 of course the grain size, silt zero to a hundred on
20 another axis, and clay the final grain size on the
21 other axis, and what we could see from this particular
22 graphic is that the data points are clustering down in
23 one corner of the graph, and this graphically
24 illustrates the general similarities of the overall
25 grain size types and hence soil types that we find in

1 the City of Midland.

2 You can see that there are a few outlying points
3 which would be normal, but generally, the key thing
4 here is just how they're clustered at one end. If we
5 had been in a different environment that had a lot of
6 variability, we'd see the dots scattered all across
7 the second line. So again this is just a good
8 representation of the overall findings.

9 I want to go ahead and talk just briefly about
10 the findings for the dioxin and furans. One of the
11 things that's different between what we were able to
12 do with the soil parameters and dioxin and furans was
13 that both dioxin and furans and the other chemicals
14 analyzed were blinded to the project team, so, in
15 other words, you don't know the exact properties
16 where the results came from.

17 So for this analysis, we were able to just
18 statistically review more of what the range of numbers
19 are but we can't actually look at them spatially. A
20 couple of key things that I wanted to point out is we
21 were very pleased to see generally all results that
22 were obtained were below the interim action level
23 established at 1,000 parts per trillion TEQ, so there
24 were no interim actions required or triggered by the
25 study.

1 The other thing that's important and that we were
2 also pleased to see is the range of TEQ concentrations
3 was very consistent with the ranges of concentrations
4 that we were seeing from past studies by Dow, DEQ, and
5 EPA. There's some statistics on the bottom that gives
6 you the total number of samples. The reason
7 you have more samples than sample stations is that
8 these sample stations are near the plant and actually
9 samples collected from two intervals; whereas, all the
10 other samples are just from the surface. You can see
11 that they range from 2 to 950 with an average and
12 median.

13 I want to show this map briefly before I talk
14 about the findings from the other chemicals. Really
15 the purpose here is just to show you like the
16 locations where the other chemicals were analyzed.
17 Whereas the soil parameters and dioxins and furans
18 were analyzed as locations across the entire study
19 area, the other chemicals were focused just on the
20 locations that are near the plant which are shown in
21 yellow and blue on the slide.

22 For this process, what we did is we looked at a
23 broad range of chemicals, about 225 all together,
24 including volatile organics, semi-volatiles,
25 pesticides, herbicides, metals, as well as general

1 chemistry parameters. Overall from that smaller set
2 of stations we looked at, we had 82 samples from 36
3 stations. The findings in general, kind of classified
4 them by the different groups here. What we find is
5 that with metals that they were found frequently, as
6 we would expect. Metals are naturally occurring.
7 We'll find them in virtually any sample in the
8 environment, be it urban or rural.

9 And what we did is we took -- for all cases here,
10 we compared our results to the generic MDEQ cleanup
11 criteria to give us an idea of what compounds might
12 require a further look. What we found in the case of
13 metals is that we detected them often and found eight
14 of the metals that we looked at that exceeded one or
15 more of the generic cleanup criteria and/or statewide
16 background levels. We don't find that to be
17 particularly unusual because there is some variability
18 in the background levels across the state.

19 As far as the volatile, semi-volatile organics,
20 there were quite a lot of those compounds analyzed.
21 Eight of them exceeded the MDEQ generic cleanup
22 criteria. Again the levels weren't particularly high
23 and generally we found this not to be too unusual
24 since those samples were near the plant and were in an
25 urban and basically an industrialized environment.

1 We were pleased to see that all the PCBs,
2 pesticides, and herbicides were below generic cleanup
3 criteria, and then we would point out that there were
4 a few compounds that were detected that don't have
5 generic cleanup criteria. Although the state has set
6 criteria for many, many compounds, there are some that
7 don't have criteria, and we detected eight that didn't
8 have criteria.

9 Again just a capture of a couple of the main
10 thoughts that we had here. One was that the soil
11 composition throughout the study area was very similar
12 and then dioxin and furan levels were consistent with
13 what we've seen from past studies.

14 Next steps, remedial investigation workplan, this
15 has been submitted to DEQ for approval, and basically
16 what's been proposed is a phased approach. The first
17 work that's been proposed is to develop site specific
18 cleanup criterion for dioxins and furans and that
19 involves resolving a bioavailability evaluation. Once
20 that work is complete, then we would unblind the
21 sample results for dioxins and furans from this study
22 and that would allow us to move forward with any
23 additional sampling that might be required to fill in
24 data gaps and provide inputs for possible risk
25 assessments, and that pretty much wraps it up.

1 Can we take questions now?

2 CHUCK NELSON: We have time for one question
3 let's say. Okay. Thank you. So the next one is
4 corrective action plan/interim response activities.

5 PETER SIMON: Good evening. My name is
6 Peter Simon. I'm with Ann Arbor Technical Services
7 and I'm the Project Manager for the Tittabawassee
8 River investigation. Tonight I'm going to provide you
9 with a general overview on where things stand related
10 to some corrective actions that we have implemented at
11 the beginning of this year for the site
12 characterization activities that we actually finished
13 in the upper Tittabawassee River last year. We've got
14 some exciting things we want to talk about, so I'm
15 also going to bring in kind of some project
16 perspectives on some of the sampling activities that
17 we will be proceeding with for the next part of the
18 River.

19 In February of this year, we submitted the upper
20 Tittabawassee site characterization report. That
21 report has been reviewed by the agencies, and I have
22 good news to announce that we've received formal
23 approval of that site investigation process. That
24 site investigation process is going to be used to move
25 forward on the next 11 miles of the Tittabawassee

1 River which we had planned to start in June of this
2 year. We've initiated the corrective action
3 activities on Reaches D, J/K, and O of the upper
4 Tittabawassee River.

5 In addition to that, we've been developing the
6 In-channel detailed site characterization for the upper
7 Tittabawassee River. The site characterization of the
8 upper Tittabawassee River for in-channel last year was
9 a broad brushed general overview to identify whether
10 the in-channel sediments were problematic or not and
11 then based on that we would develop an in-channel
12 detailed site characterization looking at a more
13 comprehensive characterization of where the deposits
14 are, what the nature and extent of the in-channel
15 sediments are. In addition to that, we are in the
16 process of developing the sampling and analysis plan,
17 the GeoMorph based sampling and analysis plan, for the
18 next 11 miles. That takes us down just about to where
19 M-47 is. It's actually just south of Imerman Park.

20 Let's take a look at the study areas. The upper
21 Tittabawassee River is what the focus of the
22 activities were for last year. It incorporates 6 and
23 a half miles, about 6.4 miles. This year's
24 investigation activities will incorporate the middle
25 Tittabawassee River. It starts at about a mile

1 downstream of Bailey Bridge Road or Smiths Crossing
2 and again extends just a little bit south of Imerman
3 Park. It's 11 river miles, pretty comprehensive
4 investigation that we're planning for this year, and
5 then for next year the lower Tittabawassee River,
6 which is about 4 and a half miles left and 6 miles of
7 the upper Saginaw.

8 Now to get on to some of the site
9 characterization summary and how that identified some
10 areas that we focused some interim response or
11 corrective actions in the upper Tittabawassee River,
12 corrective action projects again came out of the site
13 characterization. We identified some areas,
14 Reach D in particular, Reach J/K, and Reach O. I'll
15 provide you with a summary of those.

16 The goals of the corrective actions for those
17 areas were to implement pilot programs that could be
18 evaluated for the long-term types of scenarios or
19 strategies. The goal is to manage erosion and
20 movement, as well as interrupt the exposure pathways.
21 So if we have in-channel characterization, the solution
22 or pilot program for in-channel might be a little bit
23 different than say overbank or wetlands areas. Again
24 the goal is to assess technology alternatives for
25 long-term strategy development and deployment.

1 Reach D is an area in the near plant area. It's
2 upstream of the Dow Dam. Reach D is about 1200 feet
3 in length. We have some pilot corrective actions or
4 interim responses that we'll be implementing in the
5 Reach D area this summer. Reach J/K is an area to the
6 south that is bound by the Gordonville Road Bridge,
7 and Reach O again is about a mile and a half or so
8 south of Bailey Bridge Road.

9 Some general considerations moving forward. If
10 you look outside, we've got pretty good weather but
11 that wasn't the case three months ago. Many of the
12 corrective action activities that we initiated
13 starting in January of this year were somewhat weather
14 bound. As soon as the river level and flow was reduced
15 we got on the river, we began sampling and collecting
16 dathymetry. You'll see -- some of you may have seen a
17 funny looking boat running up and down the river.
18 It's kind of a glorified fish finder. So it's looking
19 and mapping the river bottom so that we have a better
20 understanding of where the deposits are and where the
21 deposits are not, but safe work conditions have been a
22 concern and primary goal for all of our
23 activities.

24 You've seen this river under a number of
25 conditions. It has a lot of different faces. During

1 the summer, it's pretty mild, but in March of this
2 year, we had flood stage elevation, and that's not the
3 time to be on the river with people and crews
4 sampling. So that has been one of the outstanding
5 tasks that we've had to manage and work around, but
6 since the beginning of April of this year, we have had
7 full crews on the river and we're sampling and
8 collecting river bathymetry, or bottom surface
9 information, and have been out there in many instances
10 working six days a week trying to provide and continue
11 the aggressive progress we've been making over the
12 last twelve months.

13 We have a wonderful ecological habitat on the
14 river. There's eagles and owls. It's a wonderful
15 ecological habitat. So anything we do on the river
16 has potential consequences. So that's a factor in any
17 corrective action in moving forward. Logistical
18 challenges, many of the project sites are remotely
19 located. The only way to get to them is either a mile
20 upstream or two or three or four miles downstream.
21 You have to get there over land and it's not adjacent
22 necessarily to direct access roads, so we're working
23 with that aspect.

24 Water management, if dredging is going to be an
25 option for this project, to do work on the in-channel

1 sediments, the amount of water that you have to handle
2 in a dredging operation is tremendous in terms of the
3 amount of material that you remove. Think of a
4 vacuum, you know, you run a lot of air through your
5 vacuum cleaner but don't get a whole lot of material.
6 You get dust. You get small particles. Well, it's
7 that same general concept, and I understand that's
8 oversimplified, but water management moving forward is
9 a pretty complicated issue.

10 Complexity of permitting process. Many of you
11 maybe built-on, added additions to your houses.
12 There's local ordinances, Township ordinances and so
13 forth on going through permitting. Again this is a
14 simplified scenario but there are permitting
15 requirements that we have to go through in order to
16 implement any kind of corrective action. We're
17 aggressively working with the agencies to optimize and
18 streamline that process so that we can continue our
19 rather aggressive process and progress this year.

20 I'm going to provide a general overview of
21 Reach D, the pilot corrective action or corrective
22 action for this area. The Reach D area is again bound
23 to the south by the Dow Dam. It's about 1200 feet in
24 length. We've collected extensive bathymetry in this
25 area, but this is not a typical river setting deposit.

1 It is a waste deposit or a deposit bound by sheet
2 piling to the east and to the west. To the south,
3 it's bound by the Dow dam. So this is not a classic
4 river setting and the nature of these deposits aren't
5 there by virtue of those natural GeoMorphical
6 processes. So this has some special considerations.

7 To give you an overview on the progress that we
8 have made so far, we've defined the lateral and
9 vertical extent, where is the deposit, how deep is it,
10 how tall is it, how wide is it. We've determined the
11 continuity. I told you that it is bound on both sides
12 by sheet piling. We've established what the
13 continuity or structural integrity, how sound is the
14 outer sheet pile. We've characterized the deposit for
15 land disposal. We've finalized disposal arrangements.
16 We've got contractors hired and on board and ready to
17 mobilize, and we've finalized the removal plan.

18 The overall removal plan in general incorporates
19 installing sheet piling around the deposit. We do
20 this for a couple of reasons. One of them is to
21 provide a safe work environment for our workers, as
22 well as to isolate the deposit so that we have better
23 controlled conditions. Again this river has a number
24 of faces and we need to be able to properly prepare
25 for that, even if we're working in generally the lower

1 flow portions of the year. The plan is to remove the
2 deposit using hydraulic dredging. Again water
3 management is going to be key here. For every amount
4 of material that comes out, there's a tremendous
5 amount of water that has to be handled, managed,
6 separated. Solids and water need to be separated, and
7 then each of those need to be processed prior to
8 disposal.

9 The next step is for the Reach D deposit.
10 There's a number of permits. There's a joint permit
11 for removal, a Water Bureau, Air Quality, and Midland
12 soil erosion permit. All of those permits have been
13 submitted. We're working again aggressively with the
14 agencies. They're working collaboratively and
15 cooperatively with us. They understand the urgency.
16 Summer is coming pretty quick and the goal is
17 collectively to be out there in 2007 to complete the
18 Reach D interim response or corrective action.

19 Reach J/K, it's different -- substantially
20 different than the Reach D area. We talked about the
21 Reach D area being in the near plant area. Reach J/K
22 is bound to the south by Caldwell Boat Launch and just
23 on the other side of that is Gordonville Road Bridge.
24 It is inside the near bend. It's the first
25 substantial insider meander bend downstream of the Dow

1 plant. There's a series of -- there's a natural levy
2 that's on the inside of this meander bend that has
3 been targeted and focused. There are elevated
4 concentrations of dioxins and furans. This deposit or
5 this inside meander bend, natural levy is eroding. So
6 one of the actions that we will be proceeding with is
7 delineating that and ultimately removing that.

8 The overview for the J/K area, we've developed a
9 plan to collect samples to establish the removal zone,
10 where do we need to remove it to. That has been done.
11 We've collected the samples. Those samples are being
12 analyzed. We've initiated the wetlands review, again
13 factoring in the ecological habitat that we have here.
14 There are wetlands aspects that need to be factored
15 into whatever plan, how are you going to get that
16 equipment in there, how are you going to get it out of
17 there, how are you going to get the material out of
18 there. We've held an on-site meeting with the DEQ.
19 We've reviewed the potential wetlands impact. We've
20 conducted a formal wetlands delineation and marked the
21 boundaries. So we're moving very aggressively. Again
22 progress is being made in the J/K area. We've
23 conducted a contractor site visit to review the
24 preliminary plan and get that aspect of the project
25 going as well.

1 The next steps are to complete the formal
2 delineation of the wetlands. That's really taking the
3 chemistry and analytical data back so that we
4 understand where the deposits need to be removed to or
5 the extent. We need to submit the formal wetlands
6 boundary map to the DEQ. We have a schedule to do
7 that. It will take place in the month of May.
8 Complete evaluation of the methods for interpreting --
9 or interrupting, I'm sorry, the exposure pathways. We
10 want to make sure that whatever solution we put forth
11 in the J/K area adequately addresses what the goals of
12 the Reach J/K corrective action is. Again we've got
13 this permitting issue. We need to obtain the required
14 permits. There's a joint permit application for
15 removal and a Midland soil erosion permit. The goal
16 again for the J/K area is to complete this work during
17 the 2007 construction season.

18 Reach O is about a mile and a half downstream
19 from Smiths Crossing or Bailey Bridge Road. This is
20 an inside meander bend. Again this is a natural
21 in-channel deposit. The J/K area was a natural levy.
22 It's the bank area. This is different. So each one
23 of these three areas is substantially different in
24 terms of the nature of the material or the deposit
25 that is being focused for the corrective action. As

1 you can see by the figure, there's a fair amount of
2 forest area, and site access is not necessarily easy.
3 It's about 1500 to 1800 feet off the first major road,
4 but we've been making pretty good progress on Reach O
5 as well.

6 Reach O, we're in the process of defining the
7 lateral and vertical extent of the deposition areas.
8 We talked about erosion and deposition. This is an
9 inside meander bend. There's a point bar that has
10 built up historically. Again I mentioned that boat
11 that's been running up and down the river. Some of
12 you may have seen it. We've been collecting
13 geophysics to understand and map the river landscape,
14 the bottom of the river. We have a very good idea of
15 what's going on in the overbank area. That was part
16 of last year's work, and now the in-channel bathymetry
17 is what we call it or landscape -- river bottom
18 landscape we are mapping and that data has been
19 collected. It's been completely collected for Reach O
20 and we are processing that so that we understand where
21 the deposit is.

22 We've identified where the extent of the deposit
23 is upstream and downstream. We have developed a
24 sampling plan to characterize that and we are in the
25 process of collecting those samples as we speak. Our

1 sampling crews have been out there this week and
2 should finish up the Reach O sampling sometime early
3 next week. We've initiated a wetlands review. We've
4 held the on-site meeting with the DEQ, again similar
5 to Reach J/K. We've reviewed potential wetlands
6 impacts. There's some pretty substantial wetlands
7 in this area and getting into this site and
8 getting into the Reach O deposit area is going to be a
9 tricky thing. So we need to make sure that whatever
10 we do we understand what the impacts of that potential
11 would be. We've conducted a formal wetlands
12 delineation and marked those boundaries. We've
13 conducted the contractor visit for project planning.
14 Again we're moving forward and getting the progress
15 down so that we have a good understanding of how the
16 contractors are going to actually implement such a
17 plan.

18 The next steps of what we talked about, we're in
19 the process of collecting the samples. Those samples
20 will be completed. We'll have the sampling completed
21 early next week. That will allow us to complete the
22 characterization of where the contaminants are. It's
23 not so much where just the sand bars or deposits are.
24 It's also where within those accreted or depositional
25 sand bar or point bars that the contaminants or

1 elevated dioxins and furans actually are. We'll be
2 submitting the wetland boundary delineation map to the
3 DEQ in May. We'll complete the evaluation of the best
4 removal methods. Depending on the actual size and
5 configuration of the deposit, there's a couple of
6 options that are available, like hydraulic dredging.
7 One of the down sides of hydraulic dredging is you've
8 got a tremendous amount of water you have to manage
9 and deal with. Mechanical is another option that we
10 may be able to embrace on this deposit depending on
11 its absolute configuration. Obtain the required
12 permits, again there's a joint permit for removal,
13 Water Bureau, and Midland County soil erosion permit.
14 We're again, as with Reach D and J/K, moving
15 aggressively with the agencies to make sure that they
16 work through the permitting issues as quickly as we
17 possibly can.

18 The overall schedule for the next six or so
19 months. We've completed the middle Tittabawassee
20 GeoMorphic surface mapping. That is a precursor to
21 developing the sampling and analysis plan, the
22 GeoMorph based sampling and analysis plan for the next
23 11 miles. That work has been completed. It was
24 actually completed this week. Later this month we'll be
25 submitting that detailed characterization for the

1 in-channel portion of the upper Tittabawassee River.
2 That is kind of the follow on work from the work that
3 we did last summer for the in-channel portion. We'll
4 be conducting the upper Tittabawassee corrective
5 actions. We talked about Reach D, Reach J/K, Reach O.
6 The plan is for summer and fall of 2007 to implement
7 corrective actions in those areas.

8 June 2007 we'll be submitting the sampling and
9 analysis plan. Now that we've received formal
10 approval and have moved the GeoMorph based site
11 characterization from a pilot scale to full
12 implementation, we'll be developing that sampling and
13 analysis plan for the next 11 miles. That work is
14 presently underway and we've got our staff and crew
15 working very aggressively to get that in early June so
16 that we can get out in the field. We've got a lot of
17 field work to complete this summer in order to get
18 11 miles characterized. That's twice the effort of
19 last year.

20 In addition to that, we'll need to get approval.
21 We're going to be working through a series of meetings
22 with the agencies, similar to what we did last year,
23 to work through the sampling and analysis plan for the
24 next 11 miles. At the end of 2007, we'll have
25 characterized nearly 17 miles of river. That's pretty

1 good in two years. In addition to that, we'll be
2 completing the characterization of the in-channel
3 sampling for the upper Tittabawassee, so we're going
4 to be sampling 17 miles of river in-channel and
5 completing the overbank, the floodplain portion, for
6 11 miles this year.

7 So that's what the plan is for 2007 and at this
8 point we'll open it up for any questions.

9 CHUCK NELSON: I think I want to have the
10 DEQ talk about any permit issues that you have right
11 now so that you can do questions together, in case you
12 both need to be responding, so you can stay. Al, I
13 understand that you're talking, is that right?

14 AL TAYLOR: Yes.

15 CHUCK NELSON: Why don't you come over here.

16 AL TAYLOR: First, just have an opportunity
17 for some clarification before I talk about the
18 permitting. One of the IRAs that wasn't discussed,
19 but I know that's on the plate, is the eroding banks
20 on L, M, N, and O, which is actually a very large
21 area, and that is part of this year's interim response
22 activity.

23 AUDIENCE MEMBER: I can't hear you.

24 AL TAYLOR: Just an opportunity to provide
25 some clarification. One other interim response

1 activity that's on the schedule for this year is
2 eroding bank work along Reaches L, M, N, and O, and I
3 don't know if you want to just talk about that
4 briefly.

5 PETER SIMON: L, M, N, and O, there's a
6 series of natural levies that have in some areas some
7 eroding bank and so we'll be conducting some stability
8 analysis of those eroding banks in the L, M, N, and O
9 area to understand where
10 eroding levies are entering the river and where
11 they're not. So it's part of the initial sampling
12 work that we would do for the middle Tittabawassee
13 River. There will be a crew that will be working in
14 the L, M, N, and O areas as well to get a better
15 understanding of the overall stability of the banks in
16 those reaches.

17 AL TAYLOR: One of the key aspects is we're
18 trying to keep the material from eroding back into the
19 river and getting into the fish. An eroding bank is a
20 big deal. Another minor clarification I wanted
21 to make in response to the schedule, which really is
22 nicely laid out, is in terms of the corrective action
23 work. It's easy to confuse interim response
24 activities, which are short actions taken to reduce
25 exposure in the short-term, versus a final

1 remedial measure. So final remedial measures are
2 going to occur at the end of the project.

3 The kind of activities Peter is talking about
4 right now are what we term interim response
5 activities, and hopefully, interim response activities
6 can become final remedies, but at this point they are
7 considered interim response activities. Additional
8 work may need to be done depending on how complete the
9 interim response activities are. With respect to
10 permitting, I think Peter laid out very well that
11 there's a significant permitting challenge for
12 implementing these interim response activities.

13 Not to go too far into it, but we
14 have people from the Water Bureau now to get the NPDES
15 permit to accept dredge material from Reach D which
16 contains dioxins and furans and some quite high levels
17 of other semi-volatile and volatile organics.

18 Land and Water Management Division permitting,
19 there's -- anytime work is done within the river or in
20 floodplains, Land and Water Management Division has
21 to -- there's a Federal requirement, and Land and
22 Water Management Division is a delegated agency to get
23 that work permit. The Army Corps of Engineers also
24 has permitting obligations, which they've asserted
25 anyway, above the Dow Dam, and certainly, below the

1 Dow Dam, they are providing permitting for that. For
2 the removal at Reach D, there is Air Quality
3 permitting that is required, and Dow needs to get a
4 permit to install -- basically because they're going
5 to be moving out a lot of this high content or high
6 strength volatile organic material, it's going to --
7 it's got the potential for quite a bit of ~~overput~~odor, so
8 there is a significant permitting challenge to move
9 through this, and as part of this pilot corrective
10 action process, the Department is working to try to
11 streamline this, you know, mass of additional
12 permitting it needs to go through so that for next
13 year and the year after it's not such a problem.

14 We have the -- just to let you know, we have Mike
15 Gray from Water Bureau back there to answer any
16 questions you may have perhaps after the meeting
17 regarding water permitting. We have Joe Haas and Joy
18 Brooks from Land and Water Management Division. You
19 guys can actually stand up so they can see you, and
20 then we have Mark Reed from Air Quality Division, I
21 didn't see Mark there, in regards to the air
22 permitting issues. I don't think the Army Corps is here.--
23 ~~basically~~Basically, that's all I've got on that particular
24 issue.

25 CHUCK NELSON: Any questions for either of

1 these gentlemen?

2 AUDIENCE MEMBER: So let me understand this,
3 the corrective action the State's calling interim
4 response, you are removing materials or potentially
5 removing materials in an expanded sense from the last
6 time we met. You've extended to two other Reaches
7 beyond what initially you talked about, is that
8 correct?

9 PETER SIMON: The removal activities in
10 Reach J/K are scheduled for this year, so maybe we can
11 get through all the permitting aspects, as well as
12 Reach D, absolutely.

13 AUDIENCE MEMBER: That's excellent. Can you
14 give us an idea of what the preliminary sampling, what
15 kinds of levels we're talking about here?

16 PETER SIMON: What types of levels where?

17 AUDIENCE MEMBER: Dioxins in these various
18 Reaches that you're going to be removing.

19 PETER SIMON: The nature of the sampling
20 that we're doing to delineate the boundaries is very
21 consistent. This is about how far do we need to
22 remove the natural levy deposit. So right now I can't
23 tell you because the laboratory results aren't back.
24 I mean, that's -- we've been sampling this week. The
25 analyses have been submitted to the lab or will be

1 submitted to the lab. In the coming days and weeks,
2 we will have that information and how we define where
3 we stop.

4 AUDIENCE MEMBER: I understand you want to
5 find the boundaries, the extent of the contamination,
6 but why did you select that site? I mean, what
7 preliminary sampling levels were discovered at that
8 site to indicate that there's a reason to find the
9 boundaries?

10 PETER SIMON: In particular, the Reach J/K
11 area is a natural levy. It's what we refer to as a
12 post industrial natural levy. It had elevated
13 concentrations at depth, buried, that were in the tens
14 of thousands. I don't remember the exact number, but
15 they were I believe it was -- 24,000 ppt was the
16 highest concentration in the natural levy in that
17 Reach J/K area.

18 AUDIENCE MEMBER: Okay. Thank you.

19 CHUCK NELSON: Sir, you've got a question,
20 too.

21 AUDIENCE MEMBER: Everything we've been
22 saying is permitting, and I'm just wondering, with all
23 the State budget cuts, is this going to have an effect
24 on the permitting process? I mean, we're laying off
25 State Troopers. We're laying off a lot of things.

1 It's out of your hands, but do you anticipate budget
2 cuts is going to slow this down even more?

3 JIM SYGO: Everybody is looking at me with
4 that question. Could it ~~have-be~~ a potential problem, I'd
5 be lying if I didn't say, yes, it could ~~have-be~~ a
6 potential problem. As many of you know, the State is
7 in a budget crisis. We believe that even with that
8 budget crisis this particular project continues to be
9 a high priority. We've stated that not only to our
10 Director but to the administration as well. So we're
11 continuing to move in that direction as it being a
12 high priority, but when the State comes up with a cash
13 flow problem, depending on how they decide to rectify
14 that problem will determine what type of impact
15 permitting activities might be impacted.

16 If they lay everybody off for 20 days, yes, it
17 could have a dramatic impact for a temporary layoff of
18 that nature. On the other hand, if the legislature
19 does something to increase revenue so that they can be
20 directed in the appropriate areas, it likely won't.
21 So the answer is, it could have, but I don't know if
22 it will, and again I guess those of you who have a
23 keen interest in this moving forward you want to make
24 sure that you let your Legislatures know to try to get
25 resolution on the State budget I guess. That will be

1 helpful.

2 CHUCK NELSON: Okay. No other questions,
3 we'll move on, and Al is going to talk about the
4 Tittabawassee River RIWP plan status.

5 AL TAYLOR: The good part about this is that
6 Gary and Peter covered most of the issues, so I can
7 make this really brief and get on to the Human Health
8 Risk Assessment talk, but just to give you an update
9 on where the remedial investigation workplan is, the
10 RIWP, or remedial investigation workplan, was
11 submitted in December of 2006 with a number of what we
12 call placeholders, which are items that we're still
13 actively working on trying to resolve. We have been
14 working with Dow in a series of meetings to resolve
15 technical and administrative concerns with the
16 remedial investigation workplan. Those have been
17 going very well. I think we've had three different
18 meetings and we've resolved both the issues with
19 respect to the remedial investigation portion with the
20 RIWP.

21 Placeholders, like the Human Health Risk
22 Assessment, are on a parallel path. Those continue to
23 be more challenging to resolve and
24 Dr. MacKenzie-Taylor is going to be talking about
25 those in a little bit here. The remedial

1 investigation workplan is kind of the overall -- a
2 good analogy that I heard from ATS, it's like an AWAC~~K~~
3 which controls the entire investigation process. It's
4 the thing that these investigations of the upper
5 Tittabawassee River, the middle Tittabawassee River,
6 and the lower Tittabawassee River are under. It
7 contains other sampling, like sampling of the water
8 column, bed load in the river, other non-GeoMorph
9 related sampling, so it's an important process. Our
10 intent is to improve the RIWP as fully as possible
11 given where we are at the time the approval is given.

12 The HHRA, or Human Health Risk Assessment, issues
13 probably will not be resolved by the time we approve
14 this. As Peter noted, the schedule is to work on the
15 middle Tittabawassee River investigation portion of
16 the investigation. It's very important. There's a
17 lot of Priority 1, Priority 2 properties in the
18 middle Tittabawassee River section. We want to --
19 those are residential properties along the river. We
20 want to complete that portion of the investigation.
21 Our focus is going to be to get that sampling and
22 analysis plan done before and during early June and
23 approved, and then in July our plan is to work on the
24 approval of the RIWP, or remedial investigation
25 workplan.

1 With respect to the Midland, there is a separate
2 remedial investigation workplan for the City of
3 Midland. That is also ongoing and parallel. I think
4 Gary gave you a pretty good update on the status of
5 things that are going on there. We will be working
6 with Dow to resolve some items with respect to the
7 study for the bioavailability. There are some
8 contaminants that have been detected that we'll
9 probably need to do some additional work on. There
10 are some data gaps which the sampling and analysis
11 plan gives us the ability to resolve, and we're going
12 to be working on those over the summer. The Midland
13 RIWP is critically dependent on the Human Health Risk
14 Assessment, because as Gary noted, further sampling is
15 pretty much dependent on the resolution of a site
16 specific cleanup criteria. So that schedule is
17 closely tied to the Human Health Risk Assessment.

18 Jumping back to the Tittabawassee River, the
19 major component of the RIWP is this GeoMorph process
20 that Peter gave a really good update on. I'm not
21 going to go into that too much, other than to say that
22 it was approved as a pilot last year for the upper
23 Tittabawassee River. Just yesterday, Dow and DEQ came
24 to agreement on the four major items that we believe
25 needed to be resolved and were to get the approval

1 completed, and that was, how do you address interim
2 response activities or pilot corrective action
3 activities in a less chaotic matter than has occurred
4 over the last year. We want to have a nicely defined
5 process for moving forward, and I believe we have
6 that, and now we have a decision tree which is going
7 to be incorporated into the remedial investigation
8 workplan that was approved as part of this pilot
9 GeoMorph process.

10 I think that's pretty much all I have with
11 respect to the RIWPs. If anyone has any questions,
12 I'll be happy to take them.

13 AUDIENCE MEMBER: I have a question I'd
14 appreciate a response from Jim Sygo and John Musser
15 that really goes back to the remediation plan, and
16 unfortunately, I had to ask this question at the last
17 meeting. I don't feel I got an answer. It's in the
18 transcript, but again what is the process of decision
19 making or your flow chart to make remediation
20 decisions? Obviously, Dow and DEQ have agreed to
21 dredge and remove soils, and Terry thinks that's a
22 good decision. I have to -- after the meeting, I'll
23 talk and explain why maybe that isn't a good decision.
24 What has the process been to come up with that final
25 determination to remove soil? I don't know all the

1 options, but obviously, one option is to maybe
2 encapsulate it, to leave it alone, to study it some
3 more, and probably a whole lot of other options that
4 I'm not aware of, but that's my same question I asked
5 at the last meeting, and I don't feel I got an answer
6 yet. There's a definitive decision going on that's
7 taken place that we're going to be removing river
8 soil. I would like to get both sides if I could.

9 AL TAYLOR: The activities that you heard
10 about tonight are interim response activities.
11 They're not final activities. These were determined
12 based on sampling and were areas of high
13 concentrations of dioxins and furans in the case of
14 Reach D, other significant levels of contaminants
15 other than dioxins and furans, like a bunch of
16 dichlorobenzenes and hexachlorobenzenes and things
17 like that were identified. In this case, the
18 concentrations in the river were 20,000 to 60,000
19 parts per trillion, so well above 90 obviously, which
20 is not really a good comparison because this is in the
21 river sediments, not a residential direct contact
22 issue, but it's also well above the thousand parts per
23 trillion criteria.

24 In the case of Reach D, there is, depending on
25 which samples you're looking at, up to around a

1 thousand parts per million of these volatile organic
2 compounds and semi-volatile organic compounds that
3 need to be removed. These compounds have historically
4 been showing up in caged fish downstream of Reach D
5 and they're a contaminant directly in the river and
6 directly impacting the resource. With respect to
7 Reach J/K and Reach O, in Reach O, there's -- 87,000
8 is the data that we have at this point. We're going
9 to have more data this week. This is parts per
10 trillion directly in the river. It's covered at this
11 point by about 6 inches of sand. In view of the
12 Department, that's not a lot of cover in a river with
13 the energy and flashiness in the Tittabawassee River.
14 We don't want the 87,000 ending up on somebody's yard.
15 So that's the rationale that we're using.

16 We have developed a decision tree collaboratively
17 with Dow which looks at soils and sediments. If soils
18 under residential conditions in the top foot exceed
19 1,000 parts per trillion, then that initiates an
20 interim response activity. If soils in a non -- and
21 let me -- I need to explain this a little bit more.
22 The initiation of this process, the first step, is to
23 go out and do some additional sampling to find out if
24 this is just a little -- you know, do you have it in a
25 jar or is this spatially extensive to do some

1 confirmation sampling, to step out and see how big the
2 problem is we're dealing with. For nonresidential
3 property, that criteria is 10,000 parts per trillion,
4 also for in-channel sediment again in the top foot of
5 soil or in the eroding bank within one foot of the
6 erosion phase. For in-channel sediments, 10,000 parts
7 per trillion is the criteria that we're using for
8 initiating additional evaluation to determine the
9 stability of the deposits, to determine if it's likely
10 moving it away. If it is and it's bio-accessible, then
11 interim response activities will be initiated. That
12 decision tree will be up on the website I imagine at
13 some point. It was just approved today as part of the
14 GeoMorph process approval document.

15 AUDIENCE MEMBER: Would it be incorrect to
16 say that the decision to remove was because they were
17 over 1,000 parts per trillion?

18 AL TAYLOR: Yes, that would be incorrect.

19 AUDIENCE MEMBER: That would be incorrect or
20 correct?

21 AL TAYLOR: That would be incorrect.

22 AUDIENCE MEMBER: Do you have a report -- a
23 written report that basically documents what you just
24 explained to me?

25 AL TAYLOR: There is the approval letter

1 that indicates that this decision tree tried to strike
2 a balance between implementing interim response
3 activities to reduce exposure in the near term and
4 allowing us to continue with our remedial
5 investigation process so that we can understand the
6 whole picture. One of the things that we're very
7 concerned about is getting tied down and doing a lot
8 of interim response activities and not being able to
9 complete the bigger picture investigation. The
10 highest concentrations that we've seen so far are in
11 the very furthest part of our study area, down in
12 Reach O. That's as far as we studied. We didn't know
13 anything about this, of course, last year. We're
14 going to know a lot more next year this time as we
15 complete the process.

16 So we have been trying to walk a line between
17 implementing these near term interim response
18 activities and not compromising the overall ability to
19 move forward with the remedial investigation process.
20 I think it's very important to find out, okay, exactly
21 what kind of concentrations are we seeing on
22 residential properties. We've made some assumptions
23 and interim response activities have been implemented
24 based on those assumptions for Priority One and
25 Priority Two, but we still have to now hopefully get

1 real data to base those additional response actions
2 on.

3 AUDIENCE MEMBER: I'd like to hear John's
4 response.

5 JOHN MUSSER: Sure. First of all, I'd like
6 to say that, as I understand it, Al's characterization
7 of the reasons that DEQ requested our interim action
8 in those areas is accurate as best I know. Those were
9 the reasons given and we did agree to do that. I
10 would say in the same breath, however, simply that the
11 rigor that's represented by the decision tree that Al
12 has described is a much more sophisticated way of
13 going about determining what ought to receive remedial
14 or interim action and what kind of measures should be
15 taken to ensure that it's effective and also what
16 measures should be taken to ensure that we learn from
17 that experience. So while the rigor wasn't
18 necessarily applied in the first example, we have
19 achieved agreement on the process going forward that I
20 think will serve everybody's interest much better.

21 AUDIENCE MEMBER: And we'll hear about that
22 decision making process tonight or is it on your
23 website?

24 JOHN MUSSER: It's going to be on the
25 website according to Al, and it was just approved

1 today, so I think you'll see it very shortly, and
2 certainly, it can be a subject of discussion at a
3 future meeting here. No problem with that.

4 AUDIENCE MEMBER: I think it would warrant
5 it, because I think the basis of the decision making,
6 be it safety, financial, all other kinds of reasons,
7 is the basis of a lot of the debate. So thank you.

8 JIM SYGO: And I wanted to add a couple of
9 things. One, we agree safety is important, and I
10 think as Peter went through the process of where we
11 were in January and the work that needed to be done to
12 make sure that whatever we did to these Reaches we
13 need to make sure that people that are working in
14 those areas are safe, and under the ice conditions we
15 had, with the weather we had, with the high waters we
16 had, with a lot of rain this spring, it wasn't a safe
17 situation. So things haven't gone as fast as we would
18 have hoped that they could have since we discovered
19 these deposits.

20 And the one thing I did want to mention, and
21 unfortunately EPA is not here today, but one of the
22 other aspects, while the State agrees with the removal
23 as an interim response action of these deposits, I
24 want to make sure that you understand that when EPA
25 also reviewed the materials that were presented as

1 part of the data that was obtained from the initial
2 stretch of the river they were very adamant as well
3 about getting those removed and getting those removed
4 quickly because of the levels that were seen in
5 particularly Reach O and then later on with Reach D.

6 So they're not here to say one way or the other
7 where they fit into this, but there was no question
8 that EPA was certainly in a position of, if the State
9 didn't move forward with Dow to get those deposits
10 removed, that EPA would look at them in a separate
11 light then, and again I think we're in agreement with
12 EPA they needed to come out. The problem is we
13 disagreed on the time frame in getting them out. EPA
14 would have liked to see them out by now, and I think
15 that's where the issues of safety came in, in the
16 process, and doing it in a process that didn't create
17 some other type of problem as a result of the removal
18 of these deposits further down the river so -- but I
19 did want to mention that.

20 JOHN MUSSER: To the Department's credit,
21 Dow certainly appreciates the consideration for the
22 safety of the workers involved here. I mean, that
23 material has been there for some time and we will get
24 to it as soon as there is reasonable weather
25 conditions and safety conditions concerned. You know,

1 we're approaching that point in time hopefully to get
2 that work done. I mean, I think it's safe to say as
3 well that we would acknowledge that these areas that
4 we've identified here, Reach D,J,K,L, M, and O I guess
5 are areas that had uncharacteristically high levels
6 identified in the sampling, and so, you know, if
7 there's a reason why they got chosen over other areas,
8 that's it. They were uncharacteristically high.

9 AUDIENCE MEMBER: Thank you.

10 CHUCK NELSON: I'd like to move on. We'll
11 have a chance for more questions later, but we really
12 did run out of -- I want to keep on the schedule so we
13 really have an hour at the end. So if you have
14 questions, please, jot them down. All of these folks
15 will still be available in the front of the group.
16 Deb.

17 DEB MACKENZIE-TAYLOR: I'm going to get
18 started while you guys get something to eat or drink.
19 I think that's a good thing because I'm going to talk
20 about something even more technical than the previous
21 speakers in Toxicology Human Health Risk Assessment.
22 I am a toxicologist with the Department of
23 Environmental Quality. My name is Deb
24 MacKenzie-Taylor. I do have a Ph.D from MSU in
25 pharmacology, toxicology and neuroscience, so I have

1 been trained to use techno jargon, and I have worked
2 for the State of Michigan in doing Human Health Risk
3 Assessments since 1991, so I'm very well trained in
4 using acronyms as well. I'm going to try very hard
5 not to do this right now but I may flip back into it
6 because I have all that training.

7 So I'm going to talk about -- give you guys an
8 overview of the Human Health Risk Assessment process
9 and how Dow's proposed to do this for these cleanups
10 in the Tittabawassee River floodplain, upper Saginaw
11 River, and the City of Midland. Since there seemed to
12 be some confusion at the last meeting about what a
13 Human Health Risk Assessment was, we thought this
14 should be done, and I got the job. So one thing I
15 wanted to let you know is that we have -- this is an
16 ongoing process. This is not done yet. This is
17 probably going to take a bit of time. This is -- as
18 Al said, this is the big placeholder in the remedial
19 investigation workplan. So we've been having biweekly
20 meetings with Dow for a few months now and we'll
21 probably continue for quite a while. So sometimes we
22 have other experts come to the meetings that can help
23 us out with certain things, so I just want you to
24 understand that a little bit.

25 Okay. Let's get in. What is a Human Health Risk

1 Assessment? And basically it's an estimate of the
2 potential for health risk in a group of people, and
3 being that we're talking environmental programs here,
4 it's focused on protection because we have to protect
5 the public health, safety, and welfare ~~in~~and the
6 environment. So for cleanups, which we're talking
7 here corrective actions under Dow's operating license,
8 is people contacting contamination and the possible
9 negative health outcomes that could occur from that
10 contact, so an example of that is cancer. It's
11 intended to be protective of people with the greatest
12 exposure, greatest contact, and the most sensitive
13 people to those possible health effects, so because of
14 that, it's probably overly protective for most people,
15 many people.

16 What it is not? Okay. I think some people were
17 confused last time thinking that it was a health
18 study. It is not the same as measuring health
19 outcomes in people. It's not a health study. It's
20 not identifying specific individuals who were exposed
21 to chemicals. It does not compare chemical levels in
22 individuals to health outcomes, and it's not going to
23 provide a medical diagnosis for anyone. It is used
24 for environmental decision making.

25 What are the steps of a Human Health Risk

1 Assessment? First, we need to identify the concerns
2 and that's called hazard identification, so what
3 chemicals are there, what levels are they, and where
4 are those. Then we need to determine the potential
5 for contact with the contamination and that's called
6 the exposure assessment. We also need to determine
7 the potential for health effects related to the
8 contaminants and that's called the toxicity
9 assessment. We need to know how much of the chemicals
10 can cause a health effect, and then when we wrap it
11 all together determine the potential risk. That's
12 called a risk characterization, and that's just
13 combining the information we gathered in the other
14 steps.

15 That first step we talked about is identifying
16 potential concerns. What are the potential
17 contaminants? We evaluated chemicals used,
18 manufactured from the facility and what by-products
19 and breakdown products could be from those chemicals.
20 We need to figure out where they are, what
21 environmental media. They could be in soils,
22 sediment, fish, and where, so, you know, what
23 properties they're on, how deep they are, things like
24 that, and then we also need to know what the
25 concentrations are, and that's pretty much what's been

1 done in the remedial investigation.

2 For Dow's proposed process, they are identifying
3 contaminants of potential concern. We've worked with
4 them to evaluate a list of chemicals of record that
5 were manufactured, used, or disposed on the Midland
6 plant site. We did consider chemical and physical
7 properties for the Tittabawassee River, what could end
8 up in the sediments and soils, floodplain soils. We
9 did evaluate our ability to measure the chemicals,
10 what analytical methods were available. We did not
11 have information on quantities, which may have been
12 able to help us on prioritizing which chemicals we
13 really needed to look for and which ones there wasn't
14 enough to be of concern, but this is an ongoing
15 process. There are some -- there were some chemicals
16 that we weren't clear on what they were and we need to
17 go back and look at those. So this could be an
18 ongoing process as the investigation continues when we
19 find out what kind of data, what kind of
20 concentrations we have out there. So we need to
21 collect the concentration data in the various media
22 from the list that we developed from the chemicals
23 that were used and manufactured there, and then when
24 we get that data, we'll screen it against some of the
25 cleanup levels and other information.

1 So at this point we've got a subset of the
2 samples that were collected last year that we've
3 selected for this extended chemical analysis, and I
4 think that data is supposed to be back by the end of
5 May, and then also we want to look at whether these
6 chemicals are in fish and possibly wild game, and Dow's
7 consultants are right now evaluating the ability to
8 measure these chemicals in those tissues. That may be
9 a little more difficult. There may not be analytical
10 methods readily available but we'll see what we can do
11 about that.

12 So the next step is the exposure assessment and
13 that's who has the potential for exposure to the
14 contamination, people like residents whose properties
15 are impacted, fisherman who eat fish from the
16 contaminated river, hunters who eat game from a
17 contaminated floodplain, farmers who work in the
18 contaminated floodplain, and what ways could they be
19 exposed, playing on their property that has
20 contaminated soil or eating fish or game or farm
21 products, and then you need to know when and how often
22 they could be exposed, you know, is it everyday, once
23 a week, and then how much of the contaminant could get
24 into the people. So we need to look into these
25 things.

1 And to give you kind of an idea of what kinds of
2 things we're thinking about for the Tittabawassee
3 River, you know, eating fish, eating game, kids
4 playing in their yard, eating livestock or products
5 from the livestock, and then farmers getting exposed
6 from working their land, or people who live nearby
7 getting exposed from the agricultural dust.

8 With the exposure assessment, there are many
9 pathways that are being evaluated, many receptors,
10 which are different types of people, and different
11 land uses that are being evaluated. The proposal is
12 to use the U of M Dioxin exposure study data as much
13 as possible, and we have been meeting with
14 Dr. Garabrant and his team to try to get that kind of
15 information and to collect additional concentration
16 data. Right now, I think we've come to agreement
17 mostly on fish from the Tittabawassee River and the
18 Saginaw River. I'm not sure if we need to discuss
19 some more on the Saginaw Bay issue, and then we also are
20 talking about collecting additional wild game. Dow's
21 proposal is also to collect additional human activity
22 data. We may do that. I want to talk a little bit
23 about that.

24 Examples of some of the issues. We have been
25 doing a lot of discussion on the exposure assessment

1 issues. Some of the things I'd like you guys to
2 understand a little bit about this is what the
3 population of concern is. Typically, we only, for
4 Human Health Risk Assessment and Environmental
5 Programs, look at people with potential exposure,
6 people who live where there is contamination or engage
7 in behaviors that could bring them in contact with
8 contamination, like eating fish from a contaminated
9 river, as compared to a population based evaluation
10 where you're looking at everyone in the area, and I
11 wanted you to get the concept that what we're looking
12 at, because as I said before, that we want to make
13 sure that we're protecting most of the people and
14 we're trying to look at a high end exposure, people
15 that are more highly exposed.

16 We have something called a reasonable maximum
17 exposure that we're required to use under State law,
18 and these would be people that would eat a lot of
19 contaminated fish or game or spend a lot of time being
20 exposed to soil or something like that, so those who
21 we're looking to represent in the Human Health Risk
22 Assessment to make sure that we're protecting as many
23 people as possible. So there is a difference with the
24 reasonable maximum exposure compared to where you see
25 some data on an average exposure where they're

1 comparing average levels between people.

2 Some other examples of some of the issues we've
3 come across in discussing the exposure assessment is
4 that we want to determine what the relative importance
5 is of the different exposure pathways and the inputs
6 into those exposure pathways, and that's called a
7 sensitivity analysis, and that would tell us, you
8 know, where we might want to collect additional data,
9 because those are important inputs, and we do want to
10 do some additional data collection. We're pretty sure
11 that fish and game are something we do want to collect
12 additional data on. We still need to discuss whether
13 | we need to do an agricultural dust study, and then we also
14 need to determine if we need to do another -- some
15 more human activity surveys and what kind of
16 information we'd need from that.

17 One of the issues that you guys have probably
18 heard about is that everyone gets some exposure to
19 dioxins and furans in their diet. So we need to know
20 how we should take that into account in this risk
21 assessment. Another thing we need to evaluate is
22 breast milk exposure to infants, and then you've heard
23 about the bioavailability study and that's how much of
24 the contaminant you're in contact with actually gets
25 absorbed into your body.

1 The next step is the toxicity assessment, and
2 those kind of questions are, what are the potential
3 health effects, and when we do have human data, we
4 like to use that, but we don't always or it's not
5 always adequate for you to tell exactly what the
6 toxicity is going to be in people. So a lot of times
7 we have to rely on animal data, and when we use animal
8 data, we like to use the weight of evidence on how the
9 animal data will relate to people, and we use that --
10 if you do have some human data, that can help give you
11 an indication if the animal data is telling you what
12 kind of effects you have in humans, but you can also
13 look at how is -- if you have some understanding of
14 how the chemicals are causing the effects in animals
15 and you know that that same process occurs in humans,
16 that can give you some idea that that kind of toxicity
17 would also occur in humans.

18 The other part of the toxicity assessment is you
19 need to know what dose would cause those kinds of
20 effects, and with cancer, we are required to use a one
21 in a hundred thousand upper bound on cancer risk in
22 the State of Michigan. For noncancer effects, we
23 typically use a no observed adverse effect level or
24 another minimal effect level. One of the things that
25 we have to consider in our dose evaluation is how a

1 human dose is equivalent to an animal dose, and for
2 some of these contaminants, like dioxins and furans
3 that are bioaccumulative, you can have the same intake
4 dose in animals and humans and it can result in higher
5 tissue levels in humans because we have more fat
6 content in our bodies and we don't metabolize things
7 as fast, so we can build those chemicals up more than
8 the animals that we study.

9 So Dow's proposed toxicity assessment process is
10 to develop cancer values for dioxins and furans and
11 any other chemicals that we don't have values for, to
12 develop noncancer values for dioxins and furans, to
13 re-evaluate the toxic equivalency factors for dioxins
14 and furans, and to use probabilistic techniques in
15 doing this. We haven't started discussing the
16 toxicity assessment aspects of this so I can't tell
17 you exactly where we're going to end up or what
18 directions and issues have arisen from this, so we can
19 maybe report that out in another meeting.

20 The next step is a risk characterization, and
21 standard risk assessments, like are in the State of
22 Michigan, we have a law that says we have to do risk
23 based cleanup criteria. We have generic cleanup
24 criteria, site specific cleanup criteria that you use
25 in Human Health Risk Assessments. There's also

1 baseline risk assessments that can be done and it's
2 done with EPA's Superfund and ~~REPERRCRA~~ programs where
3 they're doing multi-pathway, multi-contaminant risk
4 assessments.

5 And Dow's proposed Human Health Risk
6 Characterization includes developing site specific
7 direct contact criteria for dioxins and furans for
8 both the City of Midland and the Tittabawassee River
9 floodplain, doing a screening level risk assessment to
10 eliminate pathways and contaminants that don't
11 contribute significantly to estimated risk, and then
12 to finally do a probabilistic risk assessment to
13 determine which pathways have unacceptable risk.

14 Dow also has proposed a peer review process,
15 which would include an Independent Science Advisory
16 Panel, and the DEQ has agreed to this Independent
17 Science Advisory Panel. It would be used as proposed
18 for select topics and issues where there's controversy
19 between the DEQ and Dow. Things that are specifically
20 proposed to go to the Independent Science Advisory
21 Panel are the site specific soil direct contact
22 criteria and the final probabilistic risk assessment.
23 It's possible that there might be other site specific
24 criteria that will need to go to the Independent
25 Science Advisory Panel, and we wanted you to

1 understand that the Science Advisory Panel is not a
2 decision making body. The Department is going to have
3 make those decisions but it would be advisory to the
4 Department for those decisions.

5 Okay. So I'd like to summarize that the Human
6 Health Risk Assessment is an ongoing process. I don't
7 think we're going to come to completion of it in the
8 near term, but hopefully, over the long-term, we can
9 come to agreement that will assure everyone that
10 there's adequate protection for the public health. ~~Is~~Are
11 there any questions?

12 AUDIENCE MEMBER: John Witzke MUCC. Before,
13 Al mentioned caged fish studies. I'd like to get a
14 complete breakdown of what's happened so far with the
15 caged fish studies, species, what contaminants, and
16 relating to acceptable levels right now what we found
17 out so far in those caged fish studies. With all the
18 fish advisories out in the State and the nation, I
19 think they should have a pretty good handle on how
20 serious of a problem just a simple caged fish study
21 would mean. Thank you.

22 DEB MACKENZIE-TAYLOR: I think we do -- the
23 Department has some caged fish study data. I can't
24 tell you right now exactly what species. I think
25 they're typically catfish that are used in caged fish

1 studies. There is also fillet data from many species.
2 I know that there's fillet data from the Tittabawassee
3 River for walleye, small mouth bass, white bass,
4 catfish, and carp. Am I missing anything? I'm
5 looking, but there's some data -- there's very limited
6 data on the Saginaw River. I think it's predominantly
7 carp data. I'm looking at Kory to confirm that for
8 the Saginaw River.

9 KORY GROETSCH: Just carp for dioxins and
10 furans. Other fish have been sampled for other
11 contaminants, but for the dioxins and furans, just
12 carp.

13 DEB MACKENZIE-TAYLOR: Dioxins and furans on
14 the Saginaw River, there's only carp data. There is
15 data for other contaminants in the Saginaw River in
16 other fish, but that's -- as I said, we are looking to
17 collect data from additional fish. I don't have that
18 in front of me right now, but we can provide you what
19 fish we're looking at collecting additional data.

20 AUDIENCE MEMBER: Excuse me, but I thought
21 this caged fish study has been going on for quite a
22 long period of time in the Tittabawassee.

23 DEB MACKENZIE-TAYLOR: Al is going to answer
24 that question because he is more familiar with the
25 caged fish study than I am.

1 AL TAYLOR: With respect to the caged fish
2 studies that I mentioned associated with Reach D, as
3 part of the ~~revetment-and~~ ground-water interceptors
4 system (RGIS), which is a ground water collection system that
5 runs next to Dow along the river and basically
6 collects all the ground water released from Dow and
7 keeps it from venting into the river, there's a lot of
8 historically contaminated ground water there that just
9 does not belong in the river, pretty high
10 concentrations of contaminants.

11 As part of the ~~regis-~~RGIS or the ground water
12 interceptor system upgrade studies over the past 10
13 years, there have been two caged fish studies
14 conducted, at least two that I can remember now, one
15 in '97 and one in 2001. These studies -- this is
16 where a catfish -- a bunch of catfish of a certain
17 size that come from a clean source are put in cages at
18 selected points along the Tittabawassee River. In
19 this case, they were at areas along the Dow property,
20 and in this case, we found some catfish which had
21 elevated levels of some chlorinated benzene compounds,
22 and there were some other compounds I'm not -- I can't
23 reach back and grab right now, but we have that data
24 available.

25 Chlorinated benzenes are interesting because the

1 | ~~regis~~RGIS system was upgraded. We're reasonably certain
2 that there's no more contaminated ground water venting
3 into the river, but we're still -- in the 2001 study
4 still seeing these concentrations of chlorinated
5 benzenes in a repeat caged fish study. This didn't
6 make any sense to us until recently where we found
7 this contaminated deposit at Reach D which had some
8 very high concentrations of chlorinated benzenes, and
9 once this is removed, we will probably be looking at
10 additional caged fish studies to make sure that the
11 source has actually been removed in this case, and
12 that data is available.

13 AUDIENCE MEMBER: Okay. We'll wait for
14 further information, Al. I'd like to talk --

15 JOHN MUSSER: Can I comment on that, John?

16 AUDIENCE MEMBER: Go ahead.

17 JOHN MUSSER: I was just going to comment
18 that while I don't profess to know all the details of
19 the fish studies, I think Al has got much more
20 background on it, but one thing I am fairly certain of
21 is the dioxins and furans and the fish studies that
22 have been conducted to date would demonstrate that
23 there's been a considerable decrease in the amount of
24 these contaminants in fish over the years. So I don't
25 know if you want to substantiate that or challenge

1 that but I believe that is an accurate statement.

2 AL TAYLOR: No. I think with respect to 2
3 ~~through 7, 82378~~ TCDD that is true. The problem that we
4 would have is that we don't know what that decrease is
5 from. There's been a lot of things, like the
6 implementation of the Clean Water Act, a lot of
7 controls on active discharges of the river, upgrade
8 of --

9 JOHN MUSSER: Dow has also made a lot of
10 efforts to minimize any emissions coming from the
11 plant site.

12 AL TAYLOR: Right.

13 AUDIENCE MEMBER: John, do you know if you
14 guys have looked at the other congeners? I know I've
15 seen some --

16 JOHN MUSSER: I couldn't speak to that. I
17 really don't know.

18 AUDIENCE MEMBER: That would be interesting.

19 JOHN MUSSER: It may well be. I don't know
20 that we have or haven't, but I just wanted to make
21 that point about the dioxins and furans.

22 AUDIENCE MEMBER: Do you folks have a hat~~???~~
23 out in waste disposal? A number of years ago you used
24 them for test purposes. Have you provided the DEQ
25 with any information on --

1 JOHN MUSSER: I'm quite certain that any
2 research that we have done on the subject has been
3 made available there, and if you'd like copies of it,
4 I'm sure we can make them available to you as well.

5 AUDIENCE MEMBER: I wonder how far back the
6 DEQ has received that information.

7 JOHN MUSSER: Whatever is in our hands,
8 you're welcome to it.

9 AUDIENCE MEMBER: Thank you.

10 CHUCK NELSON: Okay. We're at that portion
11 of the evening where it's the chance to ask questions,
12 make comments. Ma'am, you're next.

13 AUDIENCE MEMBER: My name is Shirley Salas.
14 I am the co-founder along with Leonard Heinzeman of
15 the Tittabawassee River Voice and I'm here today
16 because Leonard isn't. So first in the matter of the
17 word "facility" that I heard earlier when I wanted to
18 talk, I want to bring up the word facility, because
19 we've asked time and again that DEQ drop that label
20 from our residences. We've asked the Governor to drop
21 that label from our residences and we've been told
22 that it's just there and it's not really -- nobody
23 labeled it I guess, but anyway you're talking about
24 cleaning up, okay. Now you had tested here. You have
25 tested there and you're going to clean this up and

1 you're going to clean that up, and so the bottom line
2 is that when you clean up my neighbor's yard, which
3 has been tested, will you then lift the label off my
4 property, which hasn't been tested? It sounds like
5 this is the way you're doing it. If you're randomly
6 testing and cleaning up, then you must lift the label
7 when you get the cleanup done, is that correct? I
8 guess this is a question for DEQ.

9 CHUCK NELSON: Jim, do you want to work on
10 this?

11 AUDIENCE MEMBER: Perhaps I didn't word it
12 as well as --

13 JIM SYGO: I think, as Al explained a little
14 bit earlier, we're not at the point where cleanups are
15 currently going on. We're at the point where certain
16 interim activities -- interim response activities are
17 being taken to ensure that the exposure that people
18 might be getting to potential concentrations of
19 dioxins and furans on their property are limited and
20 that's reduced to the extent possible. At the point
21 when remedial actions are implemented, and this is --
22 again we're a few years away from that probably yet,
23 but at the point that we're there, actions taken that
24 would remediate your property or anyone else's
25 property that returns that property to whatever number

1 is determined to be appropriate, as part of the risk
2 assessment, that will be conducted to evaluate that
3 site specific direct contact that would be an
4 acceptable level and there will be a change in either
5 law or regulation that would accept that site specific
6 number as a number that would remove the term facility
7 from anyone's property who currently might have
8 materials that are in excess of 90 parts per trillion.

9 AUDIENCE MEMBER: I don't think I quite
10 understood what you were saying. I'm looking at the
11 fact that DEQ works on supposition and extrapolation,
12 okay, and you said that you tested this many
13 properties. Now, you clean up all of those properties
14 that you tested.

15 JIM SYGO: We had not cleaned up the
16 properties because we haven't -- at this point in time
17 on the river, we haven't tested any properties.

18 AUDIENCE MEMBER: I understand that. Wait,
19 you have -- who has tested some of the properties,
20 some of the people's properties and came up with the
21 fact that there are -- there is dioxin in some
22 people's back yards? Some people's back yards have
23 been tested.

24 JIM SYGO: There has been some limited
25 testing by the Michigan Department of Community Health

1 when they were conducting their pilot study, blood
2 serum, evaluation. I don't remember exactly the
3 terminology on it but there was some limited testing
4 of properties then. There had not been any testing of
5 properties along the river outside of Dow's properties
6 to my recollection, primarily because we were
7 utilizing, if you recall, the issue that properties
8 that frequently flooded were likely to have
9 concentrations that were higher than -- were in excess
10 of a thousand parts per trillion, which was a concern.

11 One of the aspects I believe, if I'm not
12 mistaken, that will be going on as part of this year
13 and going into next year as well will be looking at
14 some of the Priority One and Priority Two properties
15 to do some transects there to see what kind of levels
16 are actually -- we're actually seeing, and the concern
17 is that -- while we've made some assumptions that the
18 levels might be about a thousand, the concern is
19 whether the levels are much, much higher, like the
20 87,000 that we found in some areas of the 6 and a half
21 mile area that has been characterized.

22 AUDIENCE MEMBER: Okay. So then the fact
23 that your compatriots, the public health people, did
24 studies doesn't mean that you're not really taking
25 that into consideration then. You're going to go out

1 and do it yourself, not you personally, but MDEQ and
2 then find out if maybe it's even worse than what they
3 said.

4 JIM SYGO: Well, Dow would be doing that as
5 part of their sampling plan.

6 AUDIENCE MEMBER: Okay. Because you told
7 them to, okay. So what about this thing called
8 facility that I have to -- I want to sell my property.
9 My house is too big for me. If I want to sell it, I
10 got to tell people, better watch out, you can't go out
11 in your back yard and garden because somebody said
12 there might be dioxin out there. Why can't you take
13 the label facility off? Seeing as how even though the
14 public health people determined that it had dioxin, it
15 was DEQ that said it was a facility, and the only
16 thing that we, Tittabawassee River Voice, are really
17 complaining about a lot is that we don't want to have
18 the term facility on each and every property along the
19 river. We're happy to see that you're cleaning up the
20 river, you know. It's always good to see things get
21 cleaned up but we just don't like having this big ugly
22 label on our property. So maybe you could just take
23 that off now on supposition that everything is going
24 to be remediated in the future, okay.

25 CHUCK NELSON: Jim, may you respond to that

1 because we need to move on to other things.

2 AUDIENCE MEMBER: Yeah, I realize that I
3 don't have an important enough message.

4 CHUCK NELSON: No, ma'am, that's not what
5 I'm saying. I want to give everybody an opportunity.

6 JIM SYGO: The bottom line is again we don't
7 put the label on. We don't put the label off.

8 AUDIENCE MEMBER: And yet we are labeled.

9 JIM SYGO: Well, it's a matter of -- it gets
10 back to what constitutes that. In terms of the
11 discussions that we've had tonight, we really haven't
12 been discussing facility in the terms of a site that's
13 contaminated above a certain number. I think Al's has
14 been using the term facility to refer to the Dow
15 chemical site and the areas that they're looking at
16 and evaluating and not on the individual property
17 owners. Quite honestly, we've been trying to stay
18 away from that discussion because it seems to be a
19 very confusing point to a lot of people relative to
20 what it means.

21 AUDIENCE MEMBER: Probably to some people,
22 yes, because it happened and then it didn't happen and
23 we were sort of flimflammed. Well, I appreciate the
24 answers you've tried to give me, Jim. I really do.
25 Thank you very much. I have another quickie, just a

1 real quickie, and that has to do with the latest -- if
2 you would have called me earlier, I wouldn't have had
3 this question.

4 CHUCK NELSON: No, ma'am. We need to let
5 the next person come up, and when some of the others
6 are done, you can come back. I want to make sure
7 that -- is there anybody else that has a question
8 right now? If not, go ahead.

9 AUDIENCE MEMBER: Okay. It's real quick.
10 The public health -- the Department of Public Health,
11 okay, you're talking about doing more studies, MDEQ,
12 doing the animal studies and all that stuff, and I
13 hope, ma'am, there you are, I'm hoping that you are
14 taking into consideration Dr. Garabrant's study on
15 real people and also the Michigan State study on
16 wildlife in the area.

17 DEB MACKENZIE-TAYLOR: We are for the Human
18 Health Risk assessment looking at the U of M study.
19 I'm not really an ecological risk assessment person.

20 AUDIENCE MEMBER: But hopefully it will as
21 well.

22 DEB MACKENZIE-TAYLOR: Ma'am, the U of M
23 study will be part of it.

24 AUDIENCE MEMBER: Okay. Thank you.

25 AUDIENCE MEMBER: Terry Miller, Lone Tree

1 Council. Back to the opening presentation if you
2 will, the opening, the Midland area soil sampling and
3 analysis findings and the next steps. If I could read
4 for a moment from Steven Chester, Director of Michigan
5 Department of Environmental Qualities, one of his
6 comments made on June 28th of 2004, the level of
7 dioxin contamination in the Midland area that some
8 would declare safe poses ten times more risk to the
9 public health than the current standard derived under
10 Michigan law. Of the states that have been derived
11 safe levels of dioxins soil, seven are lower than
12 Michigan and two are only slightly higher.

13 Now we got presentation tonight that seemed to
14 almost suggest that there were few problems in Midland
15 since no numbers above a thousand parts per trillion
16 showed up and it was almost cause for celebration.
17 Yet, there were samples in the 900 parts per trillion
18 and nobody seems to be very excited about this. What
19 are the next steps in Midland in terms of -- well,
20 questions that come to mind. Are any of those hot
21 spots, any of the 900's, 800's, 700's, in schools, in
22 parks, in areas that pose an immediate threat? I
23 mean, somehow we've set the bar so high that it's, in
24 fact, lowered, and I'm afraid that people are being
25 exposed in Midland because of the dramatic numbers in

1 the Tittabawassee floodplain in the sediments. Would
2 somebody like to respond to that?

3 JOHN MUSSER: Let me just start and make a
4 couple of qualifying comments here, Terry. My
5 understanding is -- without knowing specifically whose
6 property I'm talking about here, but my understanding
7 is that the location of the residential properties is
8 evident by just looking at the map that's on the
9 website as opposed to what's near the plant site or
10 plant side, and the residential property numbers are
11 considerable lower than the 900. I think the highest
12 level was like 350. Granted that's higher than 90. I
13 would not grant you that that necessarily represents a
14 higher risk than 90. We don't know that yet.

15 We do know that the University of Michigan has
16 done some evaluation in the City of Midland comparing
17 it to other parts of the country, including Jackson,
18 Calhoun County and also including other parts in the
19 U.S, using U.S. averages of people who live in Midland
20 are not more exposed to dioxins and furans, generally
21 speaking, than anybody else living anywhere else in
22 the country, from soil exposure in particular, and
23 we've got Dr. Garabrant here to substantiate that, if
24 you care to. If I've mischaracterized that in anyway,
25 please, correct me, but I believe that's a correct

1 assessment.

2 AUDIENCE MEMBER: John, I don't know how you
3 can make statements like that when we also hear
4 Dr. Neal Varner, the Medical Director of Saginaw
5 County Department of Public Health, he's been quoted
6 as saying, it's been shown that many of the effects of
7 the dioxin exposure occur in a non-monotonic fashion,
8 in other words, the dose response curve behaves oddly
9 with some health effects occurring at very low level
10 exposures while those same effects disappear at higher
11 doses. We don't know the health effects of those
12 levels and they're considerable, certainly above the
13 State's levels.

14 JOHN MUSSER: Well, not being a
15 toxicologist, and I would argue that neither one of us
16 are --

17 AUDIENCE MEMBER: I agree.

18 JOHN MUSSER: -- we have some toxicologists
19 that are here and we also can spend as much time as
20 you'd like talking about that issue. We're going to
21 disagree about it, I'm certain, based on where you're
22 coming from.

23 AUDIENCE MEMBER: I'm certain also, but are
24 there schools involved? Are there any playgrounds
25 involved? Are there any public areas that are

1 involved?

2 JOHN MUSSER: I told you what I know,
3 research shows us that the sampling in residential
4 areas, the highest number we have is 300, 350 at that.
5 That's the highest level in residential areas. I
6 presume that includes schools. I don't know
7 specifically because again I don't know specifically
8 which properties --

9 AUDIENCE MEMBER: Is there someone here that
10 knows whether any public areas were, in fact, sampled?

11 JOHN MUSSER: The information was blinded,
12 Terry, at the request of the City. I mean, all I can
13 tell you is we can look at the map where the grids are
14 laid out and you can identify that's in a residential
15 area, and none of the residential area samples showed
16 up higher than 350.

17 AUDIENCE MEMBER: Okay.

18 JOHN MUSSER: So if the schools are --

19 AUDIENCE MEMBER: I would consider that high
20 given the State's level is already high and that's
21 three times the State's levels.

22 JOHN MUSSER: Well, the U.S. government uses
23 a thousand parts per trillion.

24 AUDIENCE MEMBER: No, it doesn't.

25 JOHN MUSSER: It does.

1 AUDIENCE MEMBER: It does not. Would
2 someone from the State, please, respond to that?

3 JOHN MUSSER: It's in their guidelines.

4 CHUCK NELSON: I think we need Al to respond
5 to what the process is forward.

6 AL TAYLOR: I think I probably should have
7 jumped in a little bit sooner here, maybe a lot
8 sooner. One of the things that I think is important
9 to understand is kind of where we are right now. The
10 State in 1996 went out and sampled some residential
11 properties or some parks, schools, areas that are
12 similar to residential properties, and we found a
13 distribution of contamination above 90, typically
14 above 90 in a lot of these areas. Additional work was
15 done in 1998 by Dow looking at the Dow Corporate
16 Center as a surrogate for one of these Dow areas and
17 looking at some routes and some areas on the plan
18 site.

19 Since then, we've been substantially stalled out
20 on the collection of additional data. We have not
21 progressed in terms of collecting data in the City of
22 Midland. This year, or last fall, we were able -- we
23 had an opportunity to collect some additional data.
24 One of the purposes of this sampling plan was to
25 determine if the relatively limited sampling that was

1 done back in 1996 and then in 1998 if that indeed
2 reflected the distribution of contamination that we're
3 seeing in the City of Midland, was that range
4 appropriate or were we missing the boat, because it
5 really wasn't a very robust sampling program that was
6 initiated in 1996 or 1998.

7 So what this does tell us -- and again, you're
8 right, it's not great news, jumping, dancing around
9 news, but what it does tell us is the concentration
10 ranges that we saw from this sampling event are
11 consistent with what we've seen historically. We're
12 not in the position of finding concentrations that
13 are, you know, tens or hundreds of times higher than
14 we already knew about, and that was an important
15 component. Another important component of this study
16 was, okay, is there anything else out there that we
17 need to be worried about that would be a driving risk.
18 Besides dioxins and furans, are there other
19 contaminants. This gives us the first step of looking
20 at that.

21 For good or for bad, the process forward that
22 everyone's agreed to, including the City of Midland
23 who has a seat at this table, is that we're going to
24 now develop a site specific criteria and do more
25 detailed sampling to further refine these areas.

1 We're doing this initial sampling to develop
2 bioavailability characteristics and also to kind of
3 get a better sense of, is this problem a lot worse
4 than we think it is now right now. The data right now
5 is telling us that, no, it doesn't appear to be a lot
6 worse. There are some things that we still have to
7 follow up on, but it is a process that we are moving
8 forward with and it has been slow since 1996 but this
9 is giving us a way forward. We have a lot more
10 information than we had before, and as we move through
11 the process, we're going to identify the rest of these
12 concentrations and, you know, take care of it
13 appropriately.

14 AUDIENCE MEMBER: Thank you. I'll surrender
15 the mike temporarily.

16 CHUCK NELSON: Next, Dr. Garabrant, you
17 have a statement.

18 DR. GARABRANT: If I could make a couple of
19 points of clarification, first, in response to Shirley
20 Salas, the University of Michigan Dioxin exposure
21 study did take samples of soils from the properties of
22 people whose property included land in the floodplain.
23 Those samples included four sets of corings around the
24 house perimeter, samples from gardens, if there were
25 gardens, and samples from in the floodplain as close

1 to the river as possible. All of those results are on
2 our website and you can go right to it and look up and
3 see for the floodplain population the residents zone,
4 in other words, the samples right around the house,
5 the mean, the median, the 75th percentile, the 90th
6 percentile, the minimum and the maximum. So we really
7 characterized the whole distribution of samples, okay,
8 for the floodplain population. The garden soils, same
9 stuff, the floodplain populations, floodplain soils,
10 it's all there, and I can tell you, you know, we
11 sampled roughly 170 people in the -- who lived, whose
12 property was in the floodplain. What is on our
13 website will accurately characterize the distribution
14 of soil samples around their homes and their gardens
15 and down near the river, okay.

16 Now in response to Terry Miller's questions, same
17 answer. For people who live in the floodplain, it's
18 on the website. Those distributions will well
19 characterize what is on the properties that are within
20 the 100-year floodplain up and down the river.
21 Remember, our samplings started below the Dow property
22 but all the way down to Green Point, and it's -- you
23 know, it's 170 different residences. We also have on
24 the website people whose properties are in the census
25 blocks that are partially in the floodplain but their

1 properties are not. So, in other words, you live
2 across the street, you live, you know, half a block
3 away from a property that's in the floodplain, we call
4 that near floodplain. You get a very good sense of
5 the distribution of properties or soil levels on those
6 properties, again around the perimeter of the house
7 and in the gardens. Of course, there's no floodplain
8 sample from a property that doesn't have any area in
9 the floodplain.

10 Same thing for properties in the Midland plume,
11 properties that are downwind of Dow, principally to
12 the north and the northwest, that's a smaller number.
13 There were about 42 or 44. We have a very good sense
14 for what the distribution of soil levels is. Without
15 having memorized those answers, what Al Taylor said is
16 true. I mean, these properties, as I recall from our
17 presentation last August, in the floodplain,
18 42 percent of the properties had a level above 90 ppt,
19 but that's 42 percent. It's not 100 percent. It's
20 42 percent. So, you know, it's all publicly
21 available.

22 To come back to John Musser's comment, in our
23 study, we found that soil concentration, whether it
24 was the residential zone or the samples right around
25 the house or the garden or the floodplain, had very

1 little relationship to blood Dioxin levels. There
2 were relationships but they were small. Now there's
3 one exception to that as you'll recall. We found that
4 for TCDD -- 2,3,7,8 TCDD in garden soil, there
5 actually was a substantial relationship to blood TCDD
6 levels, and when we talked about that last summer, I
7 said, okay, we calculated that if you had a soil TCDD
8 level of 44 parts per trillion that that could -- and
9 again these are people who live on that soil for 20 to
10 25 years, that could bump your serum TCDD level by, my
11 recollection, about 50 or 55 percent, but we are
12 cautious about that finding because it was based on a
13 small number of data points that were driving that
14 relationship. So that's what the data said but it's a
15 small amount of data that's actually driving that.
16 But for that finding, it is fair to say the
17 relationship between soil and Dioxin levels and blood
18 Dioxin levels is either none that we could find or a
19 small contribution.

20 CHUCK NELSON: Other questions or comments.

21 AUDIENCE MEMBER: For Deb MacKenzie-Taylor,
22 dust inhalation studies, the river flats have been
23 farmed for years and spring plowing kicks quite a bit
24 of dust up for both the farmer and for the residents
25 along those properties. Are there any plans to study

1 the effects of the inhalation of these dust particles
2 and possible contaminants from the river flats?

3 DEB MACKENZIE-TAYLOR: Yes. We are --
4 actually, Dow has submitted an evaluation. I haven't
5 had time to review it yet. Tom is giving me the look.
6 So we are looking at that, and with this evaluation,
7 we're going to decide whether we need to actually
8 collect some agricultural dust, but that is something
9 we are evaluating as part of our exposure analysis.

10 AUDIENCE MEMBER: Are there any plans to
11 test like the people that have been habitually exposed
12 to this?

13 DEB MACKENZIE-TAYLOR: Not to my knowledge.

14 AUDIENCE MEMBER: Because they wouldn't
15 necessarily be river flat residents that would have
16 been tested in Dr. Garabrant's study.

17 DEB MACKENZIE-TAYLOR: None to my knowledge.
18 I don't think there's any plans to do additional blood
19 testing, if that's what you're asking, but we are
20 going to evaluate the exposure from -- both to the
21 farmer and to the residents that live close to the
22 farmer for those.

23 AUDIENCE MEMBER: Do you need to test the
24 river flats to find an area that is contaminated first
25 before you do that?

1 DEB MACKENZIE-TAYLOR: Well, what we're
2 doing right now is just evaluating whether it's
3 something we need to measure, air concentration type
4 thing, or those kinds of things. Part of the
5 investigation for the next section of the river should
6 pick up some of those agricultural properties. So if
7 we -- once we find out what kind of concentrations we
8 have in those fields, that will help us do that
9 evaluation, you are correct, and that kind of data
10 should be collected as part of the GeoMorph process.

11 AUDIENCE MEMBER: Thank you.

12 CHUCK NELSON: Next question or comment.

13 AUDIENCE MEMBER: I had a question about the
14 reasonable maximum exposure. I was just wondering if
15 you could clarify that. Is that like a distinct limit
16 that's placed on an exposure to people and to animals
17 and so forth?

18 DEB MACKENZIE-TAYLOR: It's not a limited.
19 It's a combination of inputs into the equation and let
20 me give you a little history that I didn't think
21 people wanted to hear now. In the past, EPA was
22 criticized significantly for being overly conservative
23 in their exposure assumptions and that they would
24 result in exposure that no real person would ever have
25 happen, and so they came up with some terminology.

1 Instead of a highly exposed individual, they changed
2 it to a reasonable maximum exposure, where you look at
3 what are the most significant inputs in it. You use
4 those at some high ends and then everything else is an
5 average.

6 So the intent is not to exceed the 100 percentile
7 of the population but to get close to -- get in the
8 90's, 95, 99.9 percent and not exceed the 99.9 percent
9 of the population. So the reasonable maximum exposure
10 is supposed to be a combination of some high end
11 inputs into our assessment and some average inputs
12 into the assessment so that you are getting what is
13 considered a reasonable maximum exposure.

14 AUDIENCE MEMBER: But what are some of those
15 inputs?

16 DEB MACKENZIE-TAYLOR: Those inputs can
17 include frequency and duration of exposure, things
18 like ingestion rates, which tend to be the more
19 important inputs, body weight, how many years, things
20 like that.

21 AUDIENCE MEMBER: And who are these being
22 taken by, the inputs?

23 DEB MACKENZIE-TAYLOR: The inputs, well,
24 some of the data -- we'll use the U of M study data
25 that has some of that kind of information. There is

1 some information that EPA has put together called
2 exposure factors -- they have something called
3 Exposure Factors Handbook. For some of the generic
4 criteria, we already have some exposure assumption
5 inputs put into the generic equations, and then for
6 the site specific, we'd see where we should adjust
7 those.

8 AUDIENCE MEMBER: And so that would include
9 data that's unique to this area then?

10 DEB MACKENZIE-TAYLOR: Yes.

11 AUDIENCE MEMBER: From the University of
12 Michigan study as well as --

13 DEB MACKENZIE-TAYLOR: Or other studies.
14 There's a study -- a fish consumption survey that
15 Community Health did last year, so that kind of
16 information.

17 AUDIENCE MEMBER: Okay. When could we
18 expect to see this information? I think you said --

19 DEB MACKENZIE-TAYLOR: It's going to take
20 some time for it. It's an ongoing process. I'm not
21 sure exactly when we'll be done.

22 AUDIENCE MEMBER: So there's no deadline as
23 it were?

24 DEB MACKENZIE-TAYLOR: Well, we would like
25 to get it done so that we can get the investigation

1 completed in the City of Midland and then also we need
2 it to make the decisions on what needs to be done for
3 the final remediation.

4 AUDIENCE MEMBER: Okay. Thank you. Another
5 question. This is regarding deposits that will be
6 taken from D, A, K, O, other sites that you presented.
7 Where will these deposits -- once they dredge using
8 other mechanical or hydraulic dredging, where will
9 they be stored?

10 JOHN MUSSER: Right now the material is
11 slated to go to any licensed landfill that would be
12 able to manage those materials. They're not
13 considered hazardous materials, so they would be
14 deposits that we could use to put into these licensed
15 landfills, municipal landfills. Now the decision as
16 to which of these options we're going to use hasn't
17 been made yet as far as I know.

18 AUDIENCE MEMBER: Wait, you're saying that
19 they're not hazardous?

20 JOHN MUSSER: Correct.

21 AUDIENCE MEMBER: That just seems
22 counterintuitive. Isn't that -- I mean, the materials
23 that are being removed from these sites are extremely
24 contaminated with dioxin and so forth. You're saying
25 that they're nonhazardous according to where you place

1 them?

2 JOHN MUSSER: I'm saying they're not
3 hazardous as it relates to where you can deposit these
4 materials.

5 AL TAYLOR: I guess I want to make a
6 clarification. John is absolutely right with respect
7 to dioxins and furans. The waste materials that we're
8 talking about here are not considered hazardous waste.
9 Hazardous waste has a very specific definition and
10 dioxins and furans don't fall, in this case, within
11 that definition. There are some listed waste codes
12 that have dioxins higher and these do not carry these
13 associated listings. Because of the physical
14 properties and chemical properties of dioxins and
15 furans, we believe it is appropriate for them to go to
16 a licensed solid waste landfill. With respect to
17 Reach D which has these high organic concentrations,
18 and unless something's changed, my understanding is
19 that the Reach D deposit material is going to go to
20 [Southfork-Dow's Salzburg Rd.](#) landfill.

21 AUDIENCE MEMBER: That was my understanding.

22 JOHN MUSSER: I don't know that that
23 decision has been made. I'll need some help from my
24 Dow team here to clarify that.

25 AUDIENCE MEMBER: Jim, could I get an input

1 from you about that, because I know you've
2 mentioned -- about when -- where this is going to be
3 stored and so forth?

4 AL TAYLOR: The information that we have on
5 Reach D doesn't indicate that it's considered a
6 hazardous waste, but the plans that we have in-house
7 indicate that, even though it's not a hazardous waste,
8 it's going to be managed at [Southfork-Salzburg](#) landfill because
9 of the high organic content, unless something's
10 changed that I haven't seen yet.

11 JIM SYGO: That was my understanding as
12 well. I agree with both Al and John. It would not be
13 classified under regulation as a hazardous waste. It
14 certainly is a waste that needs to be properly
15 disposed of and it needs to be disposed of consistent
16 with what would provide for adequate containment of
17 those materials.

18 AUDIENCE MEMBER: So at this time it could
19 go into any licensed landfill?

20 JIM SYGO: A licensed landfill that is
21 capable of accepting these materials. It's up to the
22 landfill whether they're going to take those or not.
23 Now there may be another issue that would be
24 appropriately considered as part of this and that
25 would be the solid waste management plans for each of

1 the individual counties. If these wastes are being
2 generated within the County of Midland, the County of
3 Midland solid waste management plan would have to be
4 evaluated to see whether or not landfills identified
5 within that county plan are identified that would
6 receive this waste or not. Now, you know, clearly it
7 could go to the City of Midland's landfill if they
8 were willing to accept it again. There are no other
9 landfills in Midland and there's no -- is Midland a
10 closed County, yes, so my impression would be that for
11 any materials that are generated within Midland County
12 it's likely going to have to go to the Salzburg site.
13 That's my impression, unless the City of Midland
14 decides to take the waste.

15 AUDIENCE MEMBER: And are any dredges being
16 removed? I mean, the last time I checked on this --
17 so they're going to be removed -- any dredges being
18 removed this spring and summer, is that right, on the
19 Tittabawassee River?

20 JIM SYGO: Well, that's certainly the intent
21 that was presented earlier.

22 AUDIENCE MEMBER: Okay. I didn't get that
23 complete because I wasn't sure if it's now seeing it's
24 more possible later this summer or it happens as early
25 as late spring?

1 JIM SYGO: Oh, I think the impression right
2 now is it will probably be sometime this summer and
3 fall.

4 AUDIENCE MEMBER: Okay. And maybe just to
5 clarify, what are some of the areas -- are these areas
6 going to be dredged and then stored in the Salzburg
7 facility, is that right? I just wanted to clarify
8 that.

9 JIM SYGO: The ones that we discussed today?

10 AUDIENCE MEMBER: Yes, as well as the
11 ones -- because last time -- because I -- I'm not sure
12 if the sites that were discussed in the last meeting
13 are the same sites we're talking about here.

14 JIM SYGO: Were you here for the initial
15 presentation?

16 AUDIENCE MEMBER: I wasn't here at the very
17 beginning.

18 JIM SYGO: Well, that's what you missed
19 then, because the discussion went on where Peter Simon
20 had mentioned that, you know, the intent was to manage
21 the dredging and the solids in the water from Area D
22 as well as from Area O. In addition to the
23 stabilization of the banks that are going to be done,
24 they're going to have to manage the water in some
25 fashion, as well as managing the solids in some

1 fashion, make sure they're properly characterized and
2 disposed of in a proper manner after adequate
3 treatment is provided to them, if that's necessary,
4 and that included, you know, in the evaluation of what
5 might need to be done within the NPDES permit
6 application.

7 AUDIENCE MEMBER: And at this time they're
8 being scheduled to be disposed to your knowledge at
9 the Salzburg facility?

10 JOHN MUSSER: No. There hasn't been a
11 decision on that on those materials. I still don't
12 have a clear picture of what Dow's position is on the
13 Salzburg landfill with respect to Reach D, but with
14 respect to everything else that we've talked about
15 tonight in terms of these other areas, the decision
16 has not been made. Suffice it to say that whatever
17 the State regulations are and/or City regulations,
18 we're going to follow the law, but those materials are
19 suitable for deposit in a Type II waste management
20 facility.

21 JIM SYGO: Does that answer your question?
22 Then there's no need to respond.

23 AUDIENCE MEMBER: Well, one large concern is
24 that the facility that's currently 99 percent finished
25 in Frankenlust Township or Zilwaukee, there's been

1 reason to believe that that site could be used to
2 store Dow contaminated soil.

3 JIM SYGO: No. All right. No.

4 AUDIENCE MEMBER: I understand but --

5 JIM SYGO: No.

6 AUDIENCE MEMBER: I think maybe we should
7 express why -- maybe clarify for people why it is that
8 Dow is so interested in this site because we know that
9 Dow is interested.

10 JIM SYGO: Well, one, that isn't the intent
11 of this meeting, but the reason why these materials
12 could not be taken to that site is associated with the
13 fact that as part of the Corps of Engineers
14 Environmental Assessment they identified only areas
15 from the Saginaw navigation channel. That navigation
16 channel exists where they've constructed navigation
17 areas for the ships and up to the confluence of the
18 Saginaw River with the Tittabawassee River. It does
19 not include the Tittabawassee River. So those
20 materials taken from the Tittabawassee River could not
21 be placed within the dredged material disposal
22 facility being located down at the Zilwaukee,
23 Frankenlust areas.

24 AUDIENCE MEMBER: But it is capable of
25 handling those materials.

1 JIM SYGO: It absolutely is capable of
2 handling those materials, but unless the Corps were to
3 conduct another environmental assessment that would
4 allow materials from the Tittabawassee River to go
5 there, they can't go there.

6 AUDIENCE MEMBER: Okay. Thank you, Jim.

7 CHUCK NELSON: Other questioners here.

8 AUDIENCE MEMBER: I'm almost done. This is
9 a question -- Al, I think this is for you. It's
10 regarding -- you mentioned that when we removed --
11 when you remove deposits from Reach O it will have an
12 impact on surrounding wetlands, a significant impact.
13 I don't know if you expressed that or someone else
14 did, but what is that? What are the significant
15 impacts that happen to these wetlands?

16 AL TAYLOR: Well, in Reach O on the side of
17 the river that the point bar is cumulative, the
18 Reach O deposit area, there is a substantial area of
19 regulated wetland directly adjacent to the river area.
20 A lot of it is farmed wetland and then there is a
21 portion of it that is forested wetland. There has to
22 be -- in order to remove this material, you have to
23 get heavy equipment in to manage what you're dredging
24 out. It's not -- and part of that involves building
25 roads across wetlands potentially or building support

1 structures potentially within the wetlands.

2 That being the case, Michigan law and Federal law
3 requires that that impact be mitigated. So I
4 believe -- and the ~~Clean~~Land and Water Management Division
5 will correct me if I'm wrong on this issue, but I
6 believe that if the road is constructed in such a
7 manner, then removed, and then the wetland comes back
8 and it's mitigated and replaced, probably no other
9 work needs to be done, so it's a short-term problem.
10 If there's a long-term damage to the wetlands, that
11 long-term damage has to be mitigated in some fashion,
12 probably off-site with the creation or protection of
13 additional wetland areas.

14 AUDIENCE MEMBER: Which DEQ is responsible
15 for, correct?

16 AL TAYLOR: Yes.

17 AUDIENCE MEMBER: Thank you.

18 JOHN MUSSER: Just add that every effort is
19 going to be made to ensure that there isn't going to
20 be an impact of that nature. We will do everything
21 possible to ensure that, and that will be with respect
22 to every similar situation that we face as we do
23 interim actions or as we approach the final corrective
24 actions that are required.

25 AUDIENCE MEMBER: I have a question about

1 the risk assessment area, which I'm glad to see on the
2 agenda tonight and I hope it continues on future
3 agendas. I don't know who it's for. I know Bob
4 Budinsky talked about Seveso last time and the number
5 of peer review studies that went on there. Nobody
6 died there, but I did hear there was a couple of
7 people killed and those were truck drivers involved in
8 removing soil from the site. I don't know if that's
9 fact but I'd follow up on it, but my real question is,
10 when we get into the risk assessment, and I have the
11 slides, where do we get into the category of what we
12 might call practical everyday man risk assessment?

13 What I'm trying to describe is, if we go get gas
14 tonight, there's a possibility we could blow ourselves
15 up. It may be very remote, but, you know, cigarettes
16 and matches and gas, there is a risk to that. We
17 manage the risk, and for most of us, we go get gas and
18 we pump it ourselves. Somewhere along this process of
19 dealing with dioxin and remediation plans and what we
20 do with it, we have to evaluate is there a serious
21 enough risk for what's in the river, what's in the
22 soils to really do anything about it, and where -- I'm
23 not asking for an answer what to do. I'm asking,
24 where does it fit in the process, when are we going to
25 deal with that everyday man risk assessment? And

1 anybody can take a shot.

2 DEB MACKENZIE-TAYLOR: After we do the Human
3 Health Risk Assessment, it will be information
4 provided to the Risk Managers, and the Risk Managers
5 will make the decision on what needs to be done. So I
6 think that might be the step you're talking about.

7 AUDIENCE MEMBER: Are these DEQ? When you
8 say Risk Managers, I'm not sure what you mean.

9 DEB MACKENZIE-TAYLOR: Yes. The oversight
10 for this is the DEQ, so it will be the Risk Managers
11 within the DEQ that will --

12 AUDIENCE MEMBER: -- have the authority to
13 make the decision?

14 DEB MACKENZIE-TAYLOR: Yes.

15 AUDIENCE MEMBER: Will they consider things
16 like financial analysis, impact on the area?

17 JIM SYGO: We'll consider everything.

18 DEB MACKENZIE-TAYLOR: They'll consider
19 everything. It won't -- that won't play into the
20 Human Health Risk Assessment itself but that could be
21 involved in the risk management decisions, okay.

22 AUDIENCE MEMBER: Well, the remediation plan
23 is to dig or not dig, to very crudely simplify it.
24 There may be some other options but they kind of tend
25 to fall into that area of leave it alone.

1 DEB MACKENZIE-TAYLOR: There are other
2 options for managing exposure or preventing
3 remobilization, so there are multiple options.

4 AUDIENCE MEMBER: Okay. I oversimplified
5 it, but the real point I wanted to bring out is, in my
6 opinion, there's a lot of consideration, there's a lot
7 of criteria, there's a lot of different bases that
8 should be looked at besides human health impact.
9 Obviously, that's the most important one, but
10 financial impact on the area, practicality, creating
11 other risks, unintended consequences. There's a
12 virtue of other criteria. Where do those come into
13 play and where does the community get input on it?

14 DEB MACKENZIE-TAYLOR: Bill, let me explain
15 a few things. There are options. Dow has lots of
16 options on how they're going to manage the risk, okay.
17 There's options on putting in exposure controls or
18 institutional controls that prevent exposure. There's
19 options for removal as you suggested. There's several
20 different options that are available, and those
21 options will be considered based on what is practical,
22 feasible, and things like that, and that's always the
23 case in any remediation project. So those options are
24 always there and considered, and Dow will propose what
25 they want to do, and the DEQ will make the decision on

1 whether what they propose is adequate to protect the
2 public health, okay.

3 AUDIENCE MEMBER: I'm trying to understand
4 what you consider in your decision making again.

5 DEB MACKENZIE-TAYLOR: It will be whether
6 those things that are proposed are adequate to do
7 those preventions, to prevent those exposures in the
8 long-term, and whether that will actually work or not,
9 okay, and that's a practical consideration.

10 AUDIENCE MEMBER: We'll stay tuned. Thank
11 you.

12 CHUCK NELSON: Other questions or comments.

13 AUDIENCE MEMBER: It's a quickie, real
14 quick. I think it's that place that you designated O,
15 Reach O. Anyway, there's a place where there's a
16 whole bunch of dioxin and it's historical, isn't that
17 correct? That's what -- the one we're talking about.

18 JOHN MUSSER: There is an elevated level
19 there and it is historical.

20 AUDIENCE MEMBER: And it's historical, okay.
21 It's historical meaning it's been there like forever,
22 okay. So why didn't you dredge it up? I think that's
23 all Bill is trying to get to. If it's historical and
24 it never went anyplace, why take it someplace else?
25 It seems to like it there. It's not going to bother

1 anybody there, and it's probably Dow Chemical
2 property. Nobody else belongs on it anyway, including
3 Dow employees. I don't know if it's Dow property, and
4 if it isn't, it could become Dow property if it's just
5 a wetland. You know, they own a lot of that anyway.
6 Anyway, something to think about, okay. It was my
7 understanding that it was historical stuff. It was
8 just there and it didn't move anywhere and that's why
9 you call it historical. Common sense says leave it
10 there.

11 CHUCK NELSON: Any other comments or
12 questions?

13 AUDIENCE MEMBER: You'll have to have
14 meetings defining tobacco and lead next. Back to the
15 proposed Human Risk Assessment. There are five slides
16 that Dr. MacKenzie-Taylor put up there that suggested
17 Dow's proposed process starting with slide seven.
18 These are -- this is Dow's proposal. I guess I'm
19 curious why it's listed as such and whether, in fact,
20 the State agrees with -- starting with number seven.
21 Doctor, would you, please, not take anymore pictures?
22 I think you've got an adequate number and it's
23 distracting. Yes.

24 DEB MACKENZIE-TAYLOR: Okay. It is Dow's
25 proposed process. It's what was submitted as part of

1 the remedial investigation workplan in December of
2 last year, and we haven't reached agreement on all of
3 it. We are working through that. So hopefully we'll
4 get to a point where we do agree on exactly how we're
5 going to do this in the next year or so, so that we
6 can get to the point where we have the information
7 necessary for the decision making.

8 AUDIENCE MEMBER: Okay. Under slide eight,
9 identifying contaminants of potential concern, there
10 are obviously other contaminants in the river, and
11 have some of those -- Al alluded to them. They've
12 been -- they're in the process of being identified?

13 AL TAYLOR: Yes.

14 DEB MACKENZIE-TAYLOR: Yes. There was some
15 samples that were run from last year's sampling for
16 what's called appendix nine chemicals, which is a list
17 of chemicals that are required to be done for ~~record~~
18 ~~of RCRA~~ corrective action, but we also had to evaluate the
19 facility -- specifically the Midland plant specific
20 chemicals, what they manufacture and use, that's not
21 specific with that list, and that is what is being run
22 right now. That extended list is being run right now
23 for a subset of the soil and sediment samples that
24 were collected last year.

25 AUDIENCE MEMBER: Will the risks include any

1 sort of cumulative or synergistic effect with these?

2 DEB MACKENZIE-TAYLOR: I think that the
3 intent is to do that, I'm looking at Tom, when the
4 probabilistic risk assessment is done.

5 TOM LONG: Certainly cumulative. I don't
6 know anyway to do it synergistically.

7 DEB MACKENZIE-TAYLOR: So the intent is to
8 look at that.

9 AUDIENCE MEMBER: Okay. Excellent. Good.
10 Slide 11, again, Dow's proposed process in terms of
11 exposure assessment. There's been the reference to
12 Dr. Garabrant's data. Do you -- does the State have
13 all the data that it requested?

14 DEB MACKENZIE-TAYLOR: No, we have not, but
15 Dr. Garabrant has been coming to these meetings, and
16 as these issues come up, he has been providing
17 information. There is -- there was some information
18 we requested last fall that we have not received yet,
19 but I'm hoping that through this process we'll get the
20 information we've requested.

21 AUDIENCE MEMBER: Could Dr. Garabrant
22 explain why this information hasn't been forthcoming
23 to the State?

24 DR. GARABRANT: Sure. Be happy to. We
25 have provided data that has been requested repeatedly

1 through the HHRA process. The only thing we have not
2 completed is a set of analyses that the DEQ requested.
3 They requested that we do an analysis -- you're
4 probably familiar with the linear regression analyses
5 we've done and looked at whether, for example, soil
6 dioxins are correlated with serum dioxins, and the
7 results of those analyses have given parameter
8 estimates and P values for that relationship. The
9 State has requested that we do a categorical analysis
10 where we categorize soil dioxins into a high, medium,
11 low, or a high versus not high. We have been working
12 on those and they have not been completed. They will
13 be done shortly. I'm not sure I can promise a date,
14 but it will be within the next couple of months, and
15 they will be provided to the State.

16 AUDIENCE MEMBER: Excellent. Thank you.

17 DEB MACKENZIE-TAYLOR: Am I done yet?

18 AUDIENCE MEMBER: No, not quite yet. Slide
19 14, how long ago was the risk assessment for the State
20 changed from one in a million to one in a hundred
21 thousand?

22 DEB MACKENZIE-TAYLOR: 1995.

23 AUDIENCE MEMBER: 1995. How does that --
24 are other States in that ball park?

25 DEB MACKENZIE-TAYLOR: There are a few

1 States that have a one in a hundred thousand cancer
2 risk level for their cleanup levels. Many States are
3 at one in a million. EPA has got a range that's one
4 in ten thousand to one in a million, and some of the
5 States have that range that EPA uses as well.

6 AUDIENCE MEMBER: And I think I'll make way
7 for others. Thank you.

8 CHUCK NELSON: Any other questions or
9 comments?

10 AUDIENCE MEMBER: We keep talking about the
11 soil samples, and I'm just kind of curious to where
12 they are being sent, who's testing them, and what are
13 their qualifications?

14 PETER SIMON: Referring to the river
15 samples, there's a variety of laboratories that have
16 been performing the Dioxins and Furans analyses, as
17 well as the appendix nine analyses. All of the
18 laboratories that are performing the analyses have a
19 rigorous certification process that is underway to
20 provide the qualifications in order to be able to
21 perform those analyses. Some of those laboratories
22 are located here in Michigan, as well as out in
23 California, and the dioxin analyses are -- there's
24 standard methodologies, USEPA protocols, for
25 implementing the analysis for dioxins and furans, and

1 following that protocol and analyzing those samples,
2 each of the laboratories had a performance audit to
3 validate the fact that they were implementing
4 consistent with those guidelines.

5 AUDIENCE MEMBER: Are these laboratories
6 independent, I mean, independent in terms of the
7 corporate structures and that sort of thing?

8 PETER SIMON: In terms of the dioxin
9 analyses, Alta, or which is now Vista Laboratories, is
10 located in California. They have no affiliation with
11 the Dow Chemical Company. TriMatrix Laboratories is
12 located in Grand Rapids, no affiliation with Dow
13 Chemical. Ann Arbor Technical Services, we performed
14 a limited subset analyses. We have no affiliation,
15 other than being a subcontractor, like the other
16 laboratories, and Dow's internal dioxin laboratory
17 analyzed a percentage of the dioxin analysis as well.

18 AL TAYLOR: Just to follow up, as part of
19 the corrective action oversight process, the State of
20 Michigan collects split samples during the
21 investigation process, and we run those samples
22 through our contract lab, both our in-State lab, for
23 dioxin levels, and we have a contractor lab that we've
24 also validated for use, so that we do auditing of the
25 results of these other so that we don't see -- we make

1 sure that we're not seeing large differences in any
2 analytical results.

3 AUDIENCE MEMBER: That was my next question,
4 so thank you.

5 AUDIENCE MEMBER: I just thought of
6 something else. Would you just confirm -- or would
7 someone from the State -- there seems to be some
8 suggestion that perhaps these toxics are left in
9 place. We've heard that from a couple of folks up
10 here. Would you, please, confirm that these
11 materials, particularly the dioxins, are making their
12 way through the Tittabawassee through the Saginaw
13 River? And the last that I recall about six miles out
14 into the Bay samples have been detected. They are
15 affecting our recreation. They affect our consumption
16 advisories of fish. They are something that needs to
17 be withdrawn, pulled out, removed from the environment
18 if we're going to have any kind of future recreation,
19 future development in that area. Al, perhaps you
20 could speak to those issues.

21 AL TAYLOR: We clearly believe that
22 materials, dioxin contamination within the river and
23 actively eroding into the river, are things that need
24 to be addressed. We have information in the upper six
25 and a half miles of the river. Obviously, we have

1 some high concentrations in-channel. This Reach O
2 deposit appears to be historic but it is also in
3 our -- is potentially vulnerable to remobilization.
4 It's got six inches of sand on it based on the
5 information that we've got right now. That's not a
6 lot of protection in a river like the Tittabawassee.
7 If a tree hangs on up it or it gets an ice scour or
8 something like that, it could readily mobilize a
9 deposit like that. So we believe it's prudent to
10 remove it so that we're not having to deal -- you
11 know, it's good to get it when it's concentrated into
12 one place rather than letting it get spread out.

13 We have information now on the Saginaw River
14 through our -- as we go through this process of
15 investigation, you know, we're seeing bedloads sampled
16 from the Saginaw River being high as well. This is
17 the material that's bouncing along the bottom of the
18 river, you know, kind of larger particles actually
19 that are saltating or bouncing or hopping along the
20 bottom of the river, pretty high concentrations. It's
21 important to remove it and it's important to do it in
22 an efficient manner as possible, because when it does
23 get spread out, it's much more difficult to address,
24 because, you know, it's much easier to get it when
25 it's concentrated in one spot, and that's why I want

1 to get them on the banks and get them in these
2 concentrated deposits before they have an opportunity
3 to redistribute and potentially cause a lot more risk.

4 CHUCK NELSON: Okay. We've reached the
5 9:00 hour. Thank you all for attending tonight. I
6 would have you note that the next meeting is August
7 the 9th in this room at 6:30. Again folks from Dow,
8 DEQ, other aspects of Michigan government will be here
9 by 6:00 and will stay until 9:30, as they will
10 tonight. So if you have questions, please, follow up
11 with all the different folks who have taken their time
12 to provide you information.

13 I would also note for those of you who may have
14 missed a presentation or you only get to see part of a
15 meeting, all these meetings, as you know, are taped.
16 You can get a copy of the tape from Dow from any of
17 the previous meetings. They're also on Midland
18 Community Midland Cable TV and they're shown on
19 multiple times, so there are opportunities. If you
20 missed a presentation and want to see the formal
21 presentation, you can view it. So I appreciate you
22 all coming. Have a good safe drive home.

23 (Concluded at 9:02 p.m.)

24

25

1 STATE OF MICHIGAN)

)

2 COUNTY OF SAGINAW)

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4
5
6 I certify that this transcript, consisting of 106
7 pages, is a complete, true, and correct transcript of
8 the proceedings and testimony taken in this case on
9 May 3, 2007.

10
11 I also certify that I am not a relative or
12 employee of or an attorney for a party; or a relative
13 or employee of an attorney for a party; or financially
14 interested in the action.

15
16 May 10, 2007

17 _____
Natalie A. Gilbert, CSR-4607, RPR

18
Notary Public, Saginaw County, MI

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My Commission Expires: 8-10-2013
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